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An Address

ON THE

TREATMENT OF DUODENAL ULCER.

Delivered before the Harveian Society of London on March 22nd, 1923,

BY SIR BERKELEY MOYNIHAN, BART., K.C.M.G., C.B., F.R.C.S.ENG.,

SENIOR SURGEON, LEEDS GENERAL INFIRMARY; PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF LEEDS.

IN a paper read before the Hunterian Society a few weeks ago I gave an account of the surgical treatment of gastric ulcer in my practice during the last 10 years. The cases of gastric ulcer and of duodenal ulcer operated upon during that period were summarised as follows. The total number of cases was 718. There were 531 cases of duodenal ulcer (men 433, women 98), and 164 case of gastric ulcer (men 83, women 81); in 152 cases one ulcer was present, in 12 cases two or more ulcers were present. There were 23 cases of gastric and duodenal ulcers together (men 10, women 13). In the total number of cases of gastric ulcer, 187, a duodenal ulcer was found, therefore, in 12·3 per cent.

During the 10 years there was no death from operation upon these cases of duodenal ulcer. The mortality in cases of gastric ulcer, alone or associated with duodenal ulcer, in which gastrectomy was performed was 1·6 per cent. I have operated upon 50 cases of jejunal ulcer; in 6 of these the primary operation had been performed by myself. The development of a jejunal ulcer is a most serious and disappointing complication of the operation of gastro-enterostomy.

RELATIVE MERITS OF MEDICAL AND SURGICAL TREATMENT.

When we are discussing the relative merits of the medical and the surgical treatment of duodenal ulcer, their immediate results have not alone to be considered. A patient who survives an operation for duodenal ulcer and leaves the hospital in good condition is often entered upon the records as "cured"; and a patient in whom, by means of medical treatment, a subsidence of symptoms has occurred has often, indeed perhaps always, the same cheerful and optimistic utterance expressed about his case. But surgical treatment, however successful its immediate result, is by no means the final event in the patient's history; and medical treatment is very often powerless to prevent a recurrence of the disease. In both cases the long view is necessary. And the long view reveals defects in both medical and surgical treatment of duodenal ulcer.

The medical treatment as usually carried out in this country is most effective if judged by its temporary results; it is disastrous if the long view is taken. The first defect which attaches to it is the uncertainty of diagnosis. It is, of course, well known that the diagnosis of duodenal ulcer, if the classical symptoms I described many years ago are present in their most complete form, is, as a rule, very accurate. The cases in which a diagnosis will then prove erroneous are few; but they do occur; and they may occur when least we expect them; and they occur when both the radiologist and the chemist are accomplices in our clinical error. The mimicry of the symptoms of duodenal ulcer is very close in cases of gastric ulcer; in cases of chronic appendicitis, especially where tuberculous glands are present in the ileo-colic angle; in cases of obstruction of the duodenum in its third part, by the superior mesenteric artery, by the ileo-colic artery, or by tuberculous glands, adherent to the duodenum, on either side of the superior mesenteric artery; in cases of chronic nicotine poisoning; or finally, in some cases of cholecystitis with or without stones. If the physician undertakes the treatment of a case of "duodenal ulcer," however confident he may be of his diagnosis, he may nevertheless be engaged with a case in which this lesion is not present; and the estimate he is then led to form of the value of medical treatment is quite fallacious. This does not often happen, but it occurs with a frequency which cannot be ignored.

NECESSITY FOR CARE AFTER RELIEF OF SYMPTOMS.

When medical treatment has resulted, as it will almost invariably, in relief of the symptoms, the most watchful and continued care of the patient is still necessary. Relief of symptoms, as I have shown in earlier papers, does not mean closure of the ulcer. Under such provocations as come from excessive work or anxiety, from chills, from over-smoking, from lack of restraint in matters of diet, a fresh attack may begin quite abruptly, and last for weeks or months. In the periods of quiescence the patient is not free from dangers; in them, as in the recurring attacks, the acute emergencies may develop with all their grave and urgent dangers. With the help of Prof. M. J. Stewart and Mr. P. J. Moir I have been able to obtain the following information as to the deaths from duodenal ulcer in the Leeds Infirmary in the last 10 years. In this period there have been 129 cases, in which death was directly attributable to hæmorrhage from duodenal ulcer or from perforation. There were 12 deaths from hæmorrhage; in all the ulcer was of the chronic variety. There were 117 deaths from perforation. In 12 of these there was an acute ulcer; in 4 of the 12 chronic ulcers also were present, and in each case it was the chronic ulcer which had perforated, the acute ulcer being merely incidental. In the remaining 105 cases the ulcer or ulcers were of the chronic type. Perforation, therefore, is found far more commonly in cases of chronic ulcer. A full clinical history is not always to be obtained, for even nowadays patients are brought in a moribund state to the hospital two, three, or four days after the catastrophe has occurred. But the records show that the very great majority of patients had undergone treatment for longer or shorter periods on a number of occasions.

MEDICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.

The form of medical treatment which has been sanctioned for many years in the case of gastric ulcers, however inappropriate it may be for them, is probably excellent in cases of duodenal ulcer. The fact that over 70 per cent. of the cases of duodenal ulcer, recognised at operation and therefore indubitable, show either a high normal curve or hyperchlorhydria when examined by the Rehfuss method; and the further fact that many of the cases of jejunal ulcer occur in patients who show the same evidence of high gastric acidity, are taken as evidence of the need for an "alkali" treatment. When the various "systems" of medical treatment were standardised it is extremely probable that the majority of the cases diagnosed as "gastric" ulcer were in truth suffering from other diseases; and that if an ulcer were present it lay, not in the stomach, but in the duodenum. The rarity of gastric ulcer, and the difficulty of its diagnosis, were not then recognised as they are now. The medical treatment of patients suffering from duodenal ulcer should be more successful than is the case with gastric ulcer. But in order to be so it must be carried out far more scrupulously, and for much longer periods than is now the custom. If physicians will realise that the methods of medical treatment at present adopted greatly exceed in danger, and in success fall far below those of surgical treatment, the methods at their disposal will no doubt be improved, and that sustained care of the patients which is most essential will be made the rule.

RESORT TO SURGICAL MEASURES.

When medical treatment has failed, not once only but perhaps many times, surgical measures will be deliberately sought. They may be hastily demanded in either of the acute catastrophes, hæmorrhage or perforation. For cases of perforation immediate

operation is necessary. In some cases not only closure of the ulcer but the performance of gastro-enterostomy may be necessary. I was, I believe, the first surgeon to advocate this, in a paper published in THE LANCET in 1901.[1] It is true that many patients in whom closure of the ulcer alone is performed do well and have no further disability; but it is also true that those in whom it can properly be performed do better, that they run no greater immediate risk, and that they are not called upon to submit, as are so many of the other class, to a second operation for duodenal obstruction, or for a return of their dyspeptic symptoms. The matter is one that must be left to the judgment of the surgeon at the moment. My own view is that if the closure of the ulcer involves a narrowing of the lumen of the gut, immediate or consequential, and if the patient's condition is good, it is better forthwith to perform the short-circuiting operation. For hæmorrhage an immediate operation is rarely necessary. If possible a direct transfusion of blood is performed, and then, or at a later stage, an operation may be more safely undertaken. Though deaths do occur from hæmorrhage, sometimes before the surgeon can be summoned, they are rare in proportion to the total number of cases in which there is bleeding.

In connexion with the deliberate surgical treatment of chronic duodenal ulcers, three operations only have been practised with any degree of frequency, and all of them are still applicable in certain cases; they are: (1) Excision of the ulcer; (2) anastomosis of the stomach to the duodenum, with or without excision of the ulcer, or division of a cicatrix; (3) anastomosis between the stomach and the jejunum.

(1) *Excision of the Ulcer.*—This method, with repair of the wound in such manner as to avoid stenosis, has proved very satisfactory in the small number of cases in which I have been able to practise it. It is essential for the success of such an operation that the ulcer shall be small in size, single, and on the anterior surface; that it shall not be surrounded by a wide area of redness, mottling, or œdema; and that no extensive or dense adhesions shall have formed between the duodenum on the one side and the liver, abdominal wall, or gall-bladder on the other. Comparatively few cases fulfil all these conditions. Ulcers are often multiple, and one or more of them may be of large size. An ulcer which appears to lend itself most readily to excision is found on closer examination to be accompanied by a "contact" ulcer on the posterior surface. This ulcer, if small in size, may only be exposed to view when the anterior wall of the duodenum is incised for the purpose of removal of the ulcer which involves it. In such circumstances the "contact" ulcer may be cauterised, and its edges approximated by a few sutures. It is better, however, to abandon the intended operation of local excision and to perform Finney's operation of gastro-duodenostomy. If a large part of the anterior surface is involved in the ulcer, the wound cannot be closed until a plastic operation is performed. In all I have performed this operation of simple excision only 17 times. There has never been a recurrence of symptoms to a degree requiring further operative treatment; one patient, a fellow student, has had a few slight discomforts which are relieved by simple measures and by care for a few days in matters of diet.

(2) *Anastomosis of Stomach to Duodenum.*—The original operation of Heineke and Mikulicz proved a very unsatisfactory operation in our experience in Leeds. The very great majority of cases of "pyloric stenosis" are due to the healing, not of gastric, but of duodenal ulcers. When in the method of "pyloroplasty" the scar was divided in the horizontal axis of the gut, and the wound stitched up in a line at right angles to this, two consequences followed: either a contraction of the new scar occurred and obstruction again became evident, or the sutured incision became adherent to the abdominal wall or the liver, and the movements of the stomach were in consequence embarrassed. A very large proportion of the cases (every case upon which I operated myself) required a second operation, and for this reason the method of pyloroplasty was rightly discarded.

Finney's operation, "gastro-duodeno-pyloroplasty," was a great improvement upon the method of Heineke and Mikulicz. Finney, a surgeon of very large experience and of great wisdom, has never ceased to advocate the claims of this method, which in his hands and in the practice of other surgeons has given good results. In this operation the incision, passing through the pylorus, extends two to three inches down into the stomach a little above the greater curvature, and along the anterior surface of the duodenum to about the middle of its second part. The objections I find to it are that it cuts through a septic ulcerating surface, that acute ulceration is so often to be found round about the chronic ulcers, that the ulcers are often callous or œdematous, or intensely adherent to a neighbouring part, and that mobilisation of the duodenum is not always possible or easy. I have preferred in appropriate cases to make an anastomosis between the stomach and the mobilised duodenum at some distance from the ulcer. The ulcer is then treated first. It may be destroyed by the cautery and the seared edges of the wound brought together, or the ulcer may be buried by infolding the duodenal walls and covering the sutured line with a wisp of omentum, gastro-hepatic or gastro-colic as may seem best. At the same time any vessels running towards the ulcers are caught up by the deep interrupted sutures, and as they are tied the vessel is obliterated. A very free opening may be made between the stomach and the duodenum, an opening quite as large as that made in the operation of gastro-enterostomy. The conditions which I consider essential are that the ulcer or ulcers of the duodenum should be in a tranquil or healed condition; that there should be no œdema, no recent accession of activity in or about the ulcer, or any dense or widespread adhesions around it; that a free mobilisation of the duodenum shall be easily possible; and that there shall be no obstruction of the duodenum by the superior mesenteric artery, its right colic branch, or by adherent tuberculous glands. In this series of cases there are 28 operations of this kind. A sufficient mobilisation of the duodenum is by no means easily managed in all cases. In this respect conditions differ greatly. The extent to which the transverse colon and the mesocolon overlap the duodenum or become firmly attached to it seems capable of considerable variation. The number or large size of the vessels reaching the duodenum from its outer or posterior side may render the separation of the intestine very difficult. I have had to abandon this operation two or three times on finding that it was really not possible to get such freedom for the duodenum as I thought essential.

The results of this operation of gastro-duodenostomy have been excellent. It is without doubt the operation that one would always prefer if only the conditions essential to its success were more commonly present. There is no such thing as regurgitant vomiting, and I have never known a recurrence of ulceration in the duodenum, or the development of a fresh ulcer at, or near, the anastomosis. If such ulceration did occur there would still be the operation of gastro-enterostomy to which we could turn. If we had access to the cases at an earlier stage (assuming that surgical treatment then were necessary) this method would certainly be more often the chosen one. In reviewing the experience of the last few years I find that I practise the method with a gradually increasing frequency. It is more than probable that some of the cases treated a few years ago by gastro-enterostomy would be dealt with, if occurring to-day, by this method of gastro-duodenostomy, combined with excision of the ulcer, or its destruction by the cautery.

(3) *Anastomosis between the Stomach and Jejunum.*—There are few operations so completely satisfactory

[1] THE LANCET, 1901, ii., 1656.

as gastro-enterostomy, properly performed in suitable cases. What I have said with regard to error in diagnosis on the part of the physician applies here, but with greater force, to the surgeon. When the parts are before him for inspection it is the business of the surgeon who undertakes these operations to know whether an organic lesion is present or not. It is still, I regret to say, the practice of some surgeons to perform gastro-enterostomy in the absence of a structural lesion which alone can justify the operation. Such work is discreditable, and should be abandoned.

After-Results of Gastro-Enterostomy.

The after-results of gastro-enterostomy for duodenal ulcer are excellent. Over 90 per cent. of the cases traced consider themselves perfectly well. In the remainder the discomforts may almost be regarded as negligible, especially by comparison with the protracted suffering before the operation. There are two exceptions only to this statement: the first concerns the patients in whom a jejunal ulcer has developed. I have traced nine cases which had occurred after I had myself performed the original operation; the earliest case was operated upon in 1904. Of the nine cases I have had six under my own care. The incidence of jejunal ulcer in cases of duodenal ulcer treated by gastro-enterostomy may therefore be assessed at a little over 1 per cent., or let us say 2 per cent., to include other possible cases not traced, or cases with symptoms so slight as not to need further treatment. One only of the six cases I have operated upon myself has died after a second operation; the remainder have been "cured" by the removal of the stomach. But a second operation is a serious matter for the patients, and is never faced with quite the same courage or confidence as are displayed before the first operation. When we are gauging the risks which lie ahead in a case of duodenal ulcer about to be treated surgically, we must therefore include not only the mortality of the first operation, but the chance, however slender, that a second ulcer may form which in turn will need for its relief a second and probably a far more formidable operation. The total risk to life is, then, not more than 2 per cent., and the chance of complete relief is not less than 90 per cent.

Causation and Treatment of Jejunal Ulcer.

The causes of jejunal ulcer are not always clear. There may be one ulcer or many; the ulcer may be exactly on the suture line, or a little distance away from it, generally in the efferent, but sometimes in the afferent position of the bowel; an ulcer may be found in the stomach or in the jejunum two or three inches away from the anastomosis. The valvulæ conniventes have been described as withered or smoothed away in that part of the jejunum which is engaged in the anastomosis. I have never seen any change of this kind in any specimen. Many causes have been assigned for this most distressing condition. Among them are the following:—

(*a*) An unabsorbed suture of silk or thread dangling at the suture line from which it slowly suppurates its way out. Wilkie in particular has called attention to this. It is not, as is generally supposed, the stitch in the mucosa which gives trouble; this is always absorbed or discharged within a few weeks. It is the serous suture that lingers for months or for years. There is no need to use either silk thread or heavy chromicised catgut, of which I have found a complete loop still present at the suture line three years and nine months after the original operation. For many years now I have had no other suture material than the finest catgut, and there has been no single disadvantage from it.

(*b*) The development of a hæmatoma along the suture line at the time of operation; the blood-clot becomes infected, an abscess forms and bursts, and a cavity remains.

(*c*) Bruising of the parts by the clamps employed at the operation, especially by the jejunal clamp. The ulcer is rarely seen at the part of the intestine embraced by the clamps. The use of the clamps may be harmful if they are applied unskilfully, with too great pressure, or a pressure insufficient to arrest hæmorrhage. The operation is so simplified by the application of clamps that it is worth while taking pains to use them properly and to apply them carefully. To discard the clamps is to declare one's incapacity to make the best of them and is a criticism, not of the clamps, but of one's self.

(*d*) The recrudescence of an old infection in the mouth or in the abdomen (including the original ulcer) or elsewhere, or the outbreak of a new acute infection. Gordon-Taylor has recorded a case of acute appendicitis in which a jejunal ulcer rapidly developed a perforation. A search for all infections, both before and during the operation of gastro-enterostomy, is a part of the procedure that no one can now afford to omit.

(*e*) A persistent hyperacidity. Jejunal ulceration occurs in proportion far more commonly after operation for duodenal ulcer than for gastric ulcer. Over 70 per cent. of cases of duodenal ulcer have a high normal acid curve or hyperacidity. In our cases of jejunal ulcer examined by the Rehfuss method, a degree of hyperacidity, sometimes extreme, was present in most cases. It appears therefore in our experience, and in that of others, that a greatly increased acidity is usual though not invariable in cases in which jejunal ulcer is found. An even stricter after-care is consequently desirable in cases of gastro-enterostomy for duodenal ulcer in which continued hyperacidity has been noticed before operation.

I have operated upon six cases of jejunal ulcer in which no ulcer was found in the stomach or jejunum at the time the operation of gastro-enterostomy was performed. It is futile procedures of this kind that help to discredit the operation. To perform gastro-enterostomy in the absence of a lesion is as useless and impotent a procedure as trepanning for extroversion of the bladder. If that were practised criticism would fall not upon the operation performed, but upon the surgeon. It should be the same here.

The treatment of jejunal ulcer is very difficult. I have no knowledge of an undoubted case in which the symptoms have disappeared entirely and have long remained absent after medical treatment. The immediate results of medical treatment are good, but relapses are perhaps invariable. This is exceedingly disappointing, for the surgical treatment of this condition is apt to be difficult, and it is attended by a danger greater than that which attaches to the original operation.

Operations.

The following operations may be practised:—

1. *Excision of the Ulcer, with Local Repair of the Anastomosis.*—This has proved very unsatisfactory in my hands. In one case a third operation was necessary, and after it the symptoms recurred. Three operations, that is, had failed to relieve the patient. This was a case early in my experience, and it led me to abandon a procedure on whose results I could not count with confidence.

2. *Excision of the Ulcer with Closure of the Anastomosis.*—This operation is applicable in cases in which no ulcer was present in the stomach or duodenum to justify the original operation. If there had been no closure of the pylorus nothing more than this is necessary so far as the stomach is concerned. A search elsewhere in the abdomen may reveal the lesion responsible for the symptoms wrongly ascribed to duodenal ulceration.

3. *Excision of the Ulcer, Closure of the Anastomosis, and the Making of a New Anastomosis, Anterior or Posterior.*—If the jejunal ulcer is large, surrounded by œdematous tissue and adherent to the transverse colon, its existence may result in so large a gap in the stomach or jejunum engaged in the anastomosis that a repair of the old opening may be impossible. In such cases, if the original duodenal ulcer or its scar is present, the stomach and jejunum may be closed, and a new anastomosis made between an unchanged part of the stomach and a lower loop of jejunum. If the anterior method is adopted an anastomosis after the design of Roux may be preferred.

4. *Excision of the Ulcer, Closure of the Anastomosis, and the Performance of Gastro-duodenostomy.*—This is a very satisfactory procedure; it is relatively very easy and safe. It implies that such a condition of the parts near the pylorus and along the duodenum is found as will permit the mobilisation of the intestine and the making of a large anastomosis. By implication, therefore, the original operation should have been gastro-duodenostomy, not gastro-enterostomy.

5. *Gastrectomy.*—I have performed this operation more frequently as my experience of the condition enlarged. The operation is very difficult in some cases; it is, indeed, never easy. The jejunum is divided above and below the anastomosis. The distal part of the jejunum is closed and the side of this piece of the intestine is united to the cut end of the stomach after the gastric resection is complete. The proximal part of the jejunum, the part leading from the flexure, is united to the distal jejunum below its union with the stomach.

6. *Jejunostomy.*—There are cases in which a very serious hæmorrhage may have occurred, and in which pain is exceedingly severe. The patient's condition is grave, indeed perilous. To perform any extensive operation would almost certainly be to hasten the end. In such circumstances the operation of jejunostomy may be performed under a local anæsthetic, and through the tube liquid food may be given in large quantities. The "drip" method of Murphy may here be used with advantage. No food, liquid or solid, is given by the mouth for weeks or months, the stomach being at rest pain soon disappears. I have twice performed this operation. In one case gastrectomy had subsequently to be undertaken because of a further hæmorrhage; in the other the patient took no food by the mouth for five months, the tube remaining in the jejunum. As no distress followed, the tube was removed and the abdominal wound closed. This was done three years ago; no recurrence of symptoms has been observed up to the present time.

HÆMORRHAGE AFTER GASTRO-ENTEROSTOMY.

The second exception must be made in connexion with cases of hæmorrhage occurring after gastro-enterostomy. I have traced 11 such in my own series of cases. The hæmorrhage may be slight or may be very serious. Its cause is not always certain. In some it is an early, or the only, manifestation of the onset of a jejunal ulcer. Not all jejunal ulcers bleed, and there are other sources of hæmorrhage than such ulcers; but I always regard this symptom as possibly indicative of a new ulcer at the line of the anastomosis. The radiologist's examination is often most helpful; the crater of an ulcer may sometimes be demonstrated, or a degree of spasm provoked by the ulcer may seem to close or distort the opening between the stomach and the jejunum so that nothing, or very little, may pass through it. The hæmorrhage may come from the original duodenal ulcer, a fresh activity in which has developed probably in consequence of an acute infection elsewhere. Or it may come from the detachment of a suture of silk or thread from the anastomotic line. Or it may be due to causes at present indeterminate. In one case the patient suffered from splenic anæmia, and gastro-enterostomy had been performed elsewhere, under the erroneous impression that dyspepsia and hæmorrhage indicated the presence of a duodenal ulcer. In three cases upon which I have performed the second operation it has been an untreated duodenal ulcer from which the blood escaped; a large vessel entered the ulcer, which appeared as fresh and active as ever, the anastomosis notwithstanding. Hæmorrhage appears to be more likely to occur, after operation, in those patients who suffered from it before operation. In four patients the coagulation-time has been increased by over 50 per cent.; in two of these I operated the second time and could discover no source of the hæmorrhage. There was no ulceration, acute or chronic, in the duodenum, the stomach, at the suture line, or in the jejunum; the spleen was not enlarged, the liver not cirrhotic. These patients have been given an alien serum or collosol calcium or an intravenous injection of a 10 per cent. solution of calcium chloride at intervals. No further hæmorrhage has yet occurred in any of them, but I am not sanguine as to the success of any of these modes of treatment since intervals of a few months or years between attacks of hæmorrhage are not unusual.

Balfour has recorded a case of recurrent hæmorrhage after gastro-enterostomy in which, finally, he removed the spleen. Not a few cases are recorded of hæmorrhage occurring from the original ulcer after gastro-enterostomy has been "successfully" performed. One such case occurred in my own practice. It was this case which helped to convince me that local treatment of the ulcer, in addition to the short-circuiting operation, was always desirable. The occurrence of hæmorrhage after gastro-enterostomy has now been noted so frequently as to make it, in my opinion, a matter of absolute necessity to obliterate the ulcer as completely as possible. Mitchell, of Belfast, showed, some years ago, that a well-infolded ulcer speedily disappeared. It is therefore enough, as a rule, to bury the ulcer by infolding the wall of the duodenum around it. This in effect closes the pylorus, but it is not in order to close the pylorus that the sutures are introduced. Closure, indeed, without division of the gut is impossible; after the lapse of a few months, or less, food will again begin to trickle through the duodenum; this is in no degree harmful, and no doubt the physiologists would say that it is to be desired. Many years ago a patient upon whom I had performed gastro-enterostomy for duodenal ulcer made a very good recovery and was for a time completely relieved of all his dyspepsia. About three years later the symptoms returned as severely as ever, and the duodenal ulcer perforated. An operation performed in haste in the country was fatal. There is a further reason for direct treatment of the ulcer. Such an ulcer is a septic place; the crater is full of infected material, capable of inoculating other parts. The "contact" ulcers not infrequently seen, both in the duodenum or in the stomach, are one evidence of this; the acute ulceration round about a chronic ulcer is another; it is recognised by the mottling of the gut around the ulcer when the area is lightly stroked with gauze. After gastro-enterostomy is performed the infection in the ulcer has access to the stomach, and the new suture line may soon be implanted with organisms which hasten to grow there. We should therefore expect jejunal ulcer to occur more frequently among the cases in which the duodenal ulcer remains untreated. It certainly appears to be true that the incidence of jejunal ulcer is lowest in the practice of those who secure the destruction of the duodenal lesion. In my opinion the direct treatment of the ulcer should never be omitted.

RESULTS OF GASTRO-ENTEROSTOMY.

The operation of gastro-enterostomy has been greatly discredited in consequence of its performance in grossly unsuitable conditions. Its very success has been against it. The results, when the operation is undertaken for an appropriate reason, and in a suitable case, are, I think, unequalled by those of any other of like magnitude in surgery. It is the extension of the method to the case for which it is not befitting that has brought the discredit which in such cases it thoroughly deserves. It would be a fairer decision to blame the surgeon rather than to quarrel with the operation. The operation has been so developed technically that it now seems easy to perform. But it is not in truth so easy as it seems if flawless perfection is to be attained. The operation is sometimes very clumsily done. The opening is made too small, it is placed in the wrong position far away from the greater curvature, it involves a part of the jejunum near its mesentery, instead of the anti-mesenteric line. The anastomosis at its lower end is sometimes brought close to the transverse colon, to which it soon becomes adherent. A loop may be left between the flexure and the anastomosis and this part of the gut may be twisted on its long axis. The suture line may be bruised because the clamps do not adequately control the blood supply. These are only some of the technical faults. As much as most operations in surgery, this one requires care, neatness, and accuracy if a perfect result is to come from it.

The operation upon a case of duodenal ulcer is in itself only an incident, though the most salient one, in that long series of events which together make up the treatment of the patient. There must be adequate and scrupulous preparation and investigation before operation, the most faithful observance of the full ritual during the operation, and a continual watchful care after operation, if full success, not only immediate but distant, is to be attained.

AFTER-TREATMENT FOLLOWING GASTRIC OPERATION.

The after-treatment of patients upon whom any gastric operation has been performed is therefore extremely important. It is necessary to give the most careful and most explicit instructions, for not a few patients may be experiencing a freedom from pain, and an enjoyment of food, that may have been denied to them for many years. Unless a warning is given, and even if it is, the bounds of prudence may soon be overstepped. Among the most harmful of habits for

all these patients is smoking. We have found that in many cases of jejunal ulcer a hyperchlorhydria is present, and may be extreme. If a Rehfuss meal is given to a patient accustomed to tobacco at a time when he is not smoking his normal "curve" may be recorded; if a second meal is given while a pipe is being smoked the increase of gastric acidity is very striking. An "attack" of duodenal ulcer often follows an orgy of tobacco; and many attacks are checked by abstinence from it. "Attacks" ascribed to duodenal ulcer are sometimes due only to nicotine poisoning, and I have not seldom rescued patients from impending operations by noticing their deeply-stained fingers and by prescribing for them a respite from tobacco for a few months and a diminished indulgence in it for ever. The close mimicry of "hunger-pain" in nicotine intoxication appears to have escaped notice.

At Leeds Infirmary the following instructions are given on a printed form to all patients after operation:—

1. Masticate the food thoroughly. Never hurry over meals.
2. Do not smoke for three months after the operation and always in strict moderation. The greatest danger lies in excessive smoking.
3. Avoid vinegar, lemon, condiments and sauces, salads, raw vegetables (celery, lettuce, &c.), pickles, pastry, sour fruit, currants, raisins, figs, lemon-peel, nuts, new bread, tough meat.
4. Take in small quantities only green vegetables (preferably passed through a sieve); meat cooked a second time.
5. Take small, light meals of simple foods for the first few months and have a very light meal (e.g., boiled milk, Benger's food, or arrowroot with a biscuit) at or near 11 A.M.
6. Alcohol, if taken at all, only in moderation; no clarets.
7. Butter and cream may be taken freely.
8. The teeth and gums and the inside of the cheeks should be brushed with care two or three times daily, and visits to the dentist should be made regularly.

DETAILS OF ROUTINE.

In our operative work we have developed a routine. The dentist, the radiologist, and the chemist all make their attack upon the patient first, unless, as sometimes happens, there are reasons contrary to this custom. While the patient is submitting to these ordeals his capacity to stand an operation is gauged, and if it prove weak we endeavour by all means in our power to fortify it. Glucose is given by the mouth, and by the rectum continuously in 15 per cent. solution, with carbonate of soda, never with salt. A direct transfusion of blood may be given once or oftener. In cases with great obstruction where the tissues are parched and desiccated, and a fear of acidosis after operation may be entertained, an intravenous infusion with carbonate of soda, with or without glucose, is found helpful. If a patient is profoundly ill these measures may be followed by a rest in one of our convalescent hospitals in the country for two or three weeks. An operation upon any patient is among the most sacred things of life. If a man trusts you with his life you must be worthy, and it is impossible to take the matter too seriously. There is no hurry to get the operation over; yet there is never a needless delay. I am most faithfully and loyally served by the sisters in my wards and my home; and I often tell the visitors who honour me by watching our work that these helpers of mine will not allow me to kill a patient, however hard I may try! A surgeon, more than most men, owes the success of his work to those who help him.

The technical details of gastric surgery are now known to all. We operate as quickly as may be necessary, doing less or more according to the patient's needs, and to his power to bear all that we think right to do. There is neither haste nor panic; if a difficulty comes we meet it quite cheerfully and perhaps with a little pride that something more is asked of us. A general inspection beginning at the cardiac orifice of the stomach is first made to confirm, or refute, the original diagnosis; if we are found to be wrong the error must be fully and frankly admitted, and we must set out to profit by a fresh discovery. We quote Saul, who went in search of his father's asses and found a kingdom. We recognise that, except in cases where peril is grave and imminent, an operation upon the stomach or the duodenum implies an examination of the gall-bladder, the removal of the appendix if it has not previously been removed (and sometimes even if it has!), a general scrutiny of the mesentery for tuberculous glands, of the colon, pelvis, kidneys, and the spleen; in some of them a latent causal infection may be laid bare. One of the great hopes I have cherished with regard to surgery is that it may be used not only to relieve the dangers and distress that at the moment menace the individual, but also to enlighten us with regard to the earlier stages of disease in the organs we can examine during life. When I coined the phrase "The pathology of the living" I did so in order to show that surgery might be used not exclusively as a therapeutic resource, but also as a means of inquiry. And the results of this inquiry have already been stupendous and revolutionary.

This wide and detailed examination which attempts the exact correlation of the symptoms with the pathological conditions discovered, constitutes a form of research than which few can be so difficult or bewildering. In laboratory research the simple question that is put may be answered in one way or another; each answer leads to other plain questions, and so the growing inquiry goes on; the factors interfering with question and direct reply being few. In the research carried out upon the human being during the course of any disease, especially if it be treated by an operation which permits an extended survey of the parts, a whole series of concomitant conditions demand inquiry and balanced consideration; all may affect the course of the disease, explain its cause, or lead to a discovery of its unsuspected relations with other diseases. Clinical research is of all inquiries the most difficult in medicine, making heaviest demands upon the knowledge, the powers of observation, the imagination, and the intellectual integrity of those who engage in it; laboratory research by comparison is bumblepuppy. The Royal Society seems to cling to a contrary opinion, to the great detriment of the regard in which its Fellowship is held.

NECESSITY OF UNDERSTANDING BETWEEN PHYSICIAN AND SURGEON.

The problem of the treatment of duodenal ulcer is one which concerns both the physician and the surgeon. The separation between them, unhappily very wide and perhaps unfriendly, is to the grave disadvantage of medicine. In the treatment of these and of other conditions, a good understanding between them is essential to the welfare of the patient. If the physician judges of surgery after contemplation only of its failures, he should be persuaded to remember that the successes of surgery are won from the failures of medicine; and that the failures of surgery, serious as they are admitted to be, are a very trivial proportion in the total volume of rescue work. If the surgeon is prone to criticise the ineffective control of these diseases exercised by the physician, he may remember that diseases affect patients, and that patients do not readily submit to discipline when a complete subsidence of their symptoms has been quickly produced by a treatment which the physician desires to continue for weeks or months beyond this stage.

I should like to say, with every respect, that those who practise medicine have not availed themselves fully of their opportunities of learning in the operation theatre. In the year 1913 the chief assistant of one of the most famous physicians in the world, a voluminous writer on gastric diseases, spent some weeks with me. On the first day of his visit he saw an operation for duodenal ulcer. I demonstrated the pyloric vein, the ulcer, the condition of the stomach, and the usual points disclosed in such an operation. He could hardly contain his excitement; the experience being evidently a very novel one. So I asked, "Has Prof. X (his chief) ever seen a duodenal ulcer in a living patient?" and he replied, "Oh! well, I *think* he has." I wish the visits of physicians to surgeons (and the return visits also, they are no less necessary) were

more frequent. Physicians would thus realise how difficult a problem that of treating gastric and duodenal ulcers really is, and they would perceive, too, how senseless it is to talk of medical treatment for such conditions as cholelithiasis. The whole treatment of these and of other diseases is not confined to the temporary relief of symptoms, but implies also both a discovery of the near or distant cause or causes, and a removal of the structural changes which result, whenever these are possible. I think it is a reproach to medicine that the surgeon should be compelled to operate so frequently for gastric and duodenal diseases. Such ulcers ought surely to be cured, far more often than they are, by medical treatment. Physicians who acquaint themselves with the pathology of a living gastric or duodenal ulcer realise how protracted and how scrupulous the medical treatment of so grave a lesion must necessarily be. If the practice of a few physicians became the custom for all, then perhaps we might find a way of escape from the grave disadvantages which result from the so frequent divorce of mind from hand in medicine.

A Lecture

ON THE TREATMENT OF

EPITHELIAL TUMOURS OF THE URINARY BLADDER,

BASED ON A CONSIDERATION OF 162 CASES PERSONALLY OBSERVED AND TREATED.

Delivered at the Mayo Clinic, Rochester, Minnesota, U.S.A.,

BY FRANK KIDD, M.A., M.CH. CAMB., F.R.C.S. ENG.,

LATE SURGEON TO THE LONDON HOSPITAL, ENGLAND; MEMBER OF THE INTERNATIONAL SOCIETY OF UROLOGY; MEMBRE DE L'ASSOCIATION FRANÇAISE D'UROLOGIE.

(*Concluded from p. 586.*)

GROUP 6.—TOTAL CYSTECTOMY.

I CAN only bring forward five cases of total cystectomy, as the operation of partial or subtotal cystectomy has diminished the need for considering total cystectomy. Many of my cases of partial cystectomy had more than three-quarters and some as much as seven-eighths of the bladder removed, so that they were very nearly total cystectomies. If a case of papilliferous or ulcerating carcinoma is seen in the first few weeks of its bleeding I have been able in several cases to effect a cure by means of diathermy applied through the cystoscope. If a case is seen fairly early when the malignant ulcer or polyp is confined to one side of the bladder and involves but one ureter, then partial cystectomy can bring relief and often cure. Total cystectomy seems therefore to be indicated under two conditions: (1) when an early papilliferous or ulcerating carcinoma of the bladder is seen growing from the base or trigone of the bladder and involving the mouths of both ureters, and (2) when the patient is suffering from multiple malignant polypi which recur in large numbers again and again and tend to fill the bladder.

My cases of cystectomy all come under the first heading. None of the cases I met with coming under the second heading were willing to submit to total cystectomy. The majority of the cases that applied for treatment suffering from sessile carcinoma of the base of the bladder were too far advanced to permit of cystectomy. The growth had already spread deeply into the pelvic cellular tissues, or into the side walls of the pelvis, or into the peritoneum or rectum. Such cases are obviously unsuitable and need drainage combined with open diathermy or radium or to be left alone. It is therefore only a few cases that can be selected for cystectomy.

What seems to prevent the operation from being successful in any but the most exceptional case is *the poor functional state of the kidneys* rather than the technical difficulties of the operation. A case will only be selected for cystectomy where the growth surrounds both ureters. By the time this has happened both ureters are widely dilated from back pressure and the kidneys correspondingly depressed in function. It is not feasible, as in prostatic cases with depressed kidneys, to drain the bladder first and do a two-stage operation after the kidneys have recovered, as the block is higher up—namely, in each ureter. Merely to cut across the ureters and divert them on to the skin or into the rectum does, it is true, provide free exit for the urine, and might seem to offer a hopeful first step for a two-stage operation. But as will be seen from a consideration of the cases of ureterostomy, that operation is nearly as dangerous as a one-stage cystectomy, the fact being that once the ureters are blocked and dilated this renders them hypersensitive to ascending infections in the lymphatics of their walls with consequent pyelitis, anuria, and death. The dilated ureters on each side will, therefore, continue to render total cystectomy seldom successful, though it is, I believe, justifiable in a few exceptional cases to attempt it, as a few successful cases have been reported. It should only be recommended after the full risks and dangers have been pointed out and when the friends know that it is the one small hope of a successful issue from a terribly painful disease which is bound to be fatal. A perusal of the literature suggests that others have experienced the same misfortunes.

None of these cases of cystectomy lived for more than three weeks. Two died of primary shock within less than three days. Two died from ascending pyelitis and anuria within a week. One lived for three weeks and, as far as his ureters and bladder were concerned, was doing well, but he developed intractable diarrhœa and died of exhaustion. The post-mortem examination showed that he had tuberculous ulceration of the small intestines. His kidneys were acting satisfactorily and his bladder wound had healed. In three of these cases I brought out the cut ureters on to the skin at the side of the loin. This step does not take a few minutes if small stab wounds are made and the cut ureters pulled out on to the skin through them, catheters being stitched into their openings. It certainly diminishes the risk of shock, but if successful it has the disadvantage that a urinal must be worn. In two cases I stitched the ureters into the rectum by Coffey's method. This step adds to the length of the operation and increases the risk of sepsis. One of these cases was a young woman of 34 with a malignant ulcer covering the whole trigone and surrounding both ureters. In four cases post-mortem examination showed that all traces of carcinoma had been successfully removed. In the fifth case I made a mistake in selection. The growth had spread extensively into the peritoneum, a point I had missed, but having cut across the urethra and prostate by a preliminary perineal incision I had to proceed and I did get the bladder out, but clearly I had not removed all the growth.

I think that we shall be bound in the future to pay attention to the results of renal function tests in these cases. Even if the growth seems an early and favourable one, if the renal function tests are deficient we shall have to remain content with diverting the ureters in the hopes of renal recovery and the outside possibility of cystectomy at a later stage. The only case of successful ureterostomy I have had refused resolutely to proceed to cystectomy later, as ureterostomy had so satisfactorily eased his sufferings. In cases of multiple malignant papillomata I feel that there may be a field for developing total cystectomy, but in the future, bearing in mind the work of Delfino, I would propose to cut away the bladder and stitch the stumps of the ureters to the urethra in the hope that a new bladder would grow therefrom. Having removed more than half the trigone and seen the bladder regrow, I am prepared to find that Nicolich did not express the whole secret when he assumed that the trigone must be left behind to act as a source

of new muscle fibre. It is possible that the ureters and urethra can supply the necessary young muscle fibre cells. I am in hopes that the work of Delfino may make a fresh step in the progress of bladder surgery. He has shown (1922) that if in the dog the whole bladder, including the trigone, is removed, and if the ureters are merely stitched to the back of the urethral stump and the lower part of the abdominal wound left open and drained, that a new bladder wall containing muscular fibres will grow in the space left. Nicolich is said to have corroborated these results in two clinical cases. Schwartz has also published work that bears on this subject. My hope then is that we may cease to have to consider implanting the cut ureters on to the skin or into different parts of the bowel, and may be able to persuade a new bladder to grow out of the ruins left after a total cystectomy. If this proves possible it may prove an advance in bladder surgery.

GROUP 7.—URETEROSTOMY.

Of six cases of diversion of the ureters on to the skin or into the bowel, five died within three weeks from ascending pyelitis. Four were cases of diversion into the upper part of the rectum or pelvic colon, and two of diversion on to the skin of the side of the loin. The ureters were dilated in every case and hence hypersensitive to infection. All these cases were relieved of their terrible strangury as regards the bladder, so that their ends were peaceful (anuria and coma). The successful case was a man aged 56, with the most frightful agony from his irritable bladder. I diverted both ureters into the rectum successfully. Four months later he wrote to say that he was perfectly comfortable and that the only thing that troubled him at all was his wife's temper. He had to go to stool every four hours and empty his rectum of water. In between he could hold it completely. He died five months later of coma. Curiously enough I had better success from diversion into the bowel than from diversion on to the skin. A successful diversion into the bowel leaves the patient in every way more comfortable than a successful diversion on to the skin when he has to wear an apparatus which needs a good deal of attention. However, he is in no way worse off than a man after permanent cystotomy —many of these patients lead comparatively comfortable lives for a time—and little worse off than after a colostomy.

GROUP 8.—PERMANENT DRAINAGE.

This group contained 18 cases of permanent cystostomy. Only 18 patients seemed to need or would consent to permanent drainage of the bladder above the pubes followed by the wearing of a silver shield and urinal. This operation in inoperable cases that are complaining of agonising strangury or constant clot retention may be a great boon. It brings immediate relief of suffering and often appears to prolong life for six months up to a year or more. One case is worthy of note, occurring in a boy aged 3 years. He was brought into hospital suffering from complete retention of urine. I opened his bladder and found it full of large jelly-like growth which I thought must be myxomatous sarcoma. Microscopic investigation showed that the growth was true epithelial carcinoma undergoing cystic degeneration. I can find no mention in the literature of a similar case. The question suggests itself—why not divert both ureters rather than drain the bladder? The answer is that the mortality of ureterostomy stands very high, that of cystostomy low. Again, by opening the bladder it is possible to apply open diathermy or radium treatment.

GROUP 9.—TREATMENT NOT ADVISED OR REFUSED.

In 24 cases nothing was done. In addition to these 24, treatment appeared inadvisable or was refused in a considerable number of cases of inoperable carcinoma of the bladder, met with as out-patients; these were not admitted to hospital and so do not come into the records. A few of the 24 refused treatment, but most of them, though inoperable, were in comparative comfort, so that there appeared no adequate reason for surgical interference. They were left alone and subsequently died of anuria and uræmic coma. It is well to remember that cancer of the bladder may, in some cases, run its course and end in death without causing any unbearable suffering—i.e., suffering that is not readily controlled by fortitude and opiate drugs. Three of these cases were of carcinoma of the sigmoid invading the bladder from without. One case had attended a physician for three years complaining of hæmaturia. At each visit the physician had said "If my medicine does not stop your bleeding you will have to be cystoscoped." The medicine proved effective for three years. Cystoscopy then revealed an inoperable carcinoma of the bladder. In the not distant future physicians will be expected to publish the mortality of drug treatment, just as surgeons at present are expected to publish the mortality of operative interference. The drug mortality of some physicians is a very high one, yet few physicians have ever realised that they also possess a treatment mortality, which can be compared to the operative treatment mortality of the surgeons.

GROUP 10.—RADIUM TREATMENT.

Two cases were submitted to the highest dose of radium it was possible to collect, left in situ for 36 hours after a preliminary cystotomy to relieve retention. Both patients died within four months. The only effect of the radium appeared to be that it stopped the hæmorrhage permanently. Three patients, all women, were treated solely by radium, applied for many hours daily per urethram and every day for a week at a time. In the first two there was a fairly early malignant ulcer between the ureters which prevented partial cystectomy. In the third there were multiple recurrent papillomata filling the bladder after previous operations by other surgeons. I advised a trial of radium rather than total cystectomy. In a woman treated in 1913 after two courses of radium I could see a year later with the cystoscope that the malignant ulcer had skinned over on the surface, bleeding had ceased, and cystitis was cured, but underneath the healed ulcer I could see that traces of deep growth still remained, though there was very little, if any, thickening to be felt per vaginam. I have completely failed to trace this patient later than 1914. One woman died a year later despite the radium treatment. One woman, treated in May, 1921, is still alive in August, 1922. Her pains are lessened but she still has hæmaturia; she is not cured.

Radium appears to act as an intense selective destroyer of cancer cells that lie in its immediate neighbourhood. If it fails to kill the cells that lie deeper it may even stimulate them into more active growth. It may cause a malignant ulcer of the bladder to skin over for a time and so may cure a cystitis and stop hæmorrhage, and in this respect the results of radium treatment are apt to be deceptive. In some cases radium is said to render an inoperable case operable. Nevertheless, I feel that we are still a long way from the time when radiant energy as applied by means of radium or the Rontgen rays will hold out a better hope of permanent cure than a well-designed operation. Certainly I am as yet aware of no results from radium treatment which can compare with a successful cysto-diathermy treatment or a successful subtotal cystectomy. I should reserve radium, as yet, for early malignant ulcers lying between the ureters, especially in women, and for cases of multiple recurrent papillomata which fill the bladder. I should be prepared to advise partial or total cystectomy once there was evidence in any particular case that radium was doing no good, or, even if it appeared that radium had checked the superficial growth and so rendered operation less difficult and more likely to succeed. It is also justifiable to use radium, Rontgen rays, and open diathermy for surgically inoperable cases, giving a guarded prognosis.

I believe that radiant energy can fulfil a useful rôle in pre-operative and post-operative treatment, and also that in the future when it can be not only measured accurately but focused minutely then it may yet prove a curative agent. B. S. Barringer (1920, 1921) states that in his opinion, if surgery can cure 15 cases in 100, radium can cure 20. Barringer appears to have seen some definite cures from radium (1917). I feel that he underestimates the powers of successful surgery. I am able to report out of 80 cases submitted to surgical and diathermic attacks 41 known cases of cure, some up to 11 years since their treatment, and this underestimates the position; also out of 28 cases submitted to partial cystectomy 11 known cases of cure. This is better than Barringer's 15 out of 100. In Barringer's latest paper, out of 41 cases treated by radium during 1916–17 only seven can be stated to be free from carcinoma, only one more than three years since the treatment. I fail to see that Barringer has yet made good his position. Though it must be agreed that radium can cure a few cases of bladder cancer, it is difficult to prognosticate which ones, so that I feel we are giving our patients the best advice if we advise cysto-diathermy or subtotal cystectomy rather than radium treatment in the present stage of progress, and reserve radium for cases that are not suitable for these measures. Radium may arrest a growth and yet give rise to so severe a burn that the patient is left with an intractable cystitis, which may be more painful than the disease for which the radium was employed. It is well to bear this in mind. I understand that the results of radium treatment in the hands of Barringer and Bumpus are steadily improving. Instead of trying to produce a gross reaction on cancer and tissue cells from a large dose of the element itself they are now endeavouring to produce a lethal action on the cancer cells alone by scattering glass emanation tubes at regular intervals throughout the growths and leaving them there. In this way they claim that they are getting a wider lethal action on the cancer cells without producing necrosis and burning in the normal tissues. We must not close our eyes to this work, and I hope to see it develop. Nevertheless in the types of case suitable for radium treatment I am not sure that open diathermy may not eventually prove to give better results.

GROUP 11.—WRONG DIAGNOSES.

In these 162 cases I can only plead guilty to having made a wrong or doubtful diagnosis of tumour of the bladder in two cases, to such accuracy has the cystoscope brought the diagnosis. Our mistakes teach us more than our successes and should be recorded.

CASE 1.—Male, aged 40 in 1914. Two years strangury and hæmaturia. Cystoscopy without anæsthetic. "Bald smooth tumour projecting from the neck of the bladder on the left side. Is this a myxoma or a malignant bald papilloma or is it a senile enlargement of a prostatic lobe?" I was puzzled and advised exploration. Eventually the "tumour" turned out to be a prolapsed ureter containing a stone, which was successfully removed.

CASE 2.—Male, aged 62 in 1918. Three months' difficulty and slow stream. Cystoscopy without anæsthetic. One pint of residual urine. "There appears to be a large sessile carcinoma on the base of the bladder between the ureters." Exploration advised but nothing done. His doctor writes four years later to say that the patient is quite well. This must have been a case of extensive inflammatory cystic œdema of the trigone of the bladder due to cystitis behind an enlarged prostate, or else it was a case of spontaneous cure of cancer. I have observed spontaneous cure of proved carcinoma of the stomach.

Bladder lesions which may be mistaken for tumour unless care is exercised are acute inflammatory œdema of the mouth of a tuberculous ureter, a similar ureter due to colon bacillus inflammation, a stone impacted in the lower end of the ureter, and inflammatory papillomata described above. I venture to think there are few lines of surgery in which it is possible to attain such accuracy of diagnosis in dealing with tumours of a deep viscus.

GROUP 12.—TRUE EPITHELIAL PAPILLOMA OF THE MALE URETHRA.

I have included one case of true epithelial papilloma of the male urethra, as it is a condition very rarely encountered.

Male, aged 40, sent to me from a distant part of the world, where he had been treated for two years as a case of gonorrhœa; this in spite of the fact that he persistently pointed out that he suffered from a urethral discharge of blood and not of pus and that he went with his wife regularly during the time without any evil consequences, a fact which escaped the notice of his doctors. The aero-urethroscope showed me the presence of six long-pedicled papillomata hanging from the roof of the penile urethra 3 to 4 inches from the meatus. These resembled papillomata of the bladder and were quite unlike the ordinary gonorrhœal wart. I slit the penile urethra right down along its floor and destroyed each papilloma completely with a large diathermy needle, having first removed one for section. I stitched up the urethra, which healed by first intention. The patient writes two years later to say that he is perfectly well. The sections made of these growths showed that they almost exactly resembled simple papillomata of the bladder. Had their origin not been known the pathologist would have named them as simple papillomata of the bladder.

CONCLUSIONS.

1. In cases of papilloma of the bladder of a benign type diathermy as applied through the cystoscope holds out at least a 90 per cent. chance of cure without the risk of opening the bladder. To open the bladder and snip out such tumours should therefore be considered as an unnecessary interference that possesses a definite risk to life.

2. In cases of papilloma of the bladder of doubtful malignancy, it is possible to obtain a certain number of cures by means of diathermy applied through the cystoscope. Nevertheless, if diathermy fails to show an adequate destructive reaction in the tumour after at most three treatments, it should be given up and sub-total cystectomy shall be carried out instead.

3. In cases of malignant papilloma, early papilliferous carcinoma, and even of very early ulcerating carcinoma of the bladder, sub-total or partial cystectomy marks a great advance in bladder surgery. It should render the old intravesical operation obsolete except in a few isolated cases. It is an operation of considerable technical difficulty and presents a definite risk to life, but when successful it leads to a higher percentage of real cures than after the older type of operation, as its principles are based on a firmer pathological foundation. All cases of partial cystectomy should be followed up at regular intervals by means of cystoscopy.

4. Total cystectomy has been rendered almost obsolete by partial cystectomy, diathermy, and radium. It should be reserved for cases of multiple malignant papillomata that defy other treatment, and for a few favourable cases of early carcinoma involving both ureteric openings.

5. Ureterostomy presents almost as great risk to life as total cystectomy. When successful it brings great relief, and it may be used as a preliminary to total cystectomy in a few favourable cases.

6. Radium has in my opinion not yet justified its claim to supersede surgery. The future may decide otherwise when we learn to control radiant energy. Nevertheless, it has already established a claim to our very closest consideration. In the present state of knowledge I believe that it has already replaced total cystectomy. That is to say, for that class of case in which we should formerly have considered cystectomy, we should now prefer to advise radium treatment, combined perhaps with open fulguration and deep Rontgen-ray therapy. Again, we should cease to remain content with simply draining or leaving alone so-called inoperable cases. We shall advise them to have their bladders opened and one of two courses pursued—either open diathermy, or fulguration combined with the implantation of radium-emanation glass tubes, perhaps followed up by deep Rontgen-ray therapy and cystoscopic application of radium and diathermy.

Throughout this paper I have endeavoured to speak of four types of epithelial tumours of the bladder: simple papilloma, malignant papilloma, papilliferous carcinoma, ulcerating carcinoma. Perhaps a better classification would be pedunculated tumours, simple and malignant and sessile tumours, papilliferous and ulcerous. Clinically we can recognise these four types of epithelial tumours of the bladder.

I wish to record my thanks to Dr. Franklin H. Martin and the librarians of the American College of Surgeons for their help in gathering together for me a large body of the literature dealing with my subject. Their willingness to assist surgeons of all countries in preparing a list of the literature of any subject is, I believe, a forward step of immense significance for the future.

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THE THERAPEUTIC ACTION OF BISMUTH IN SYPHILIS.

BY C. LEVADITI.

(*From the Institut Pasteur, Paris.*)

IN a recent contribution to the *Presse Médicale*[1] I discussed the question of the use of bismuth, particularly of basic tartro-bismuthate of potassium and sodium (trépol) in the treatment of syphilis. Since the publication of that article, numerous reports have been added to the collection of evidence which may be quoted in favour of the use of this new preparation in all forms of syphilis. I propose to analyse these later reports, quoting the earlier works when necessary.

Historical.

Bismuth has been employed as a cicatrising agent in cutaneous lesions since the seventeenth century. In 1786 Odin[2] recommended its use in gastric affections. Masucci[3] employed bismuth proto-iodide for dressing mucous papules, seeking to obtain a local reaction only. Not till 1889 did Balzer[4] make the first experimental tests of toxicity, with a view to the treatment of syphilis by bismuth. These attempts, however, were not successful; the sequelæ observed in dogs by Balzer caused him to abandon the use of the drug. In 1916 Sauton and Robert[5] used bismuth with success in the treatment of spirillosis of fowls. Their experiments were confirmed by Sazerac and myself[6] at the beginning of 1920, and by many

repeated trials we proved, in animals and man, the rapid cicatrisant action of sodium and potassium tartro-bismuthate on various syphilitic lesions. These results were verified clinically by Fournier and Guenot,[7] using bismuth in the form of sodium and potassium tartro-bismuthate. It is of interest to follow the results obtained by various workers in different manifestations of syphilis at the several periods of the disease.

Primary Syphilis.

Bernard[8] reported, in several cases of syphilis, three of them primary, the disappearance of lesions in a few days, following two or three injections of several centigrammes of trépol; the treponema frequently disappeared after a single injection. Duhot[9] stated that the action of trépol is rapid and manifest in syphilitic chancre. Truffi[10] noted the regression of a syphiloma, and its rapid cicatrisation, a few days after the first dose. He attributed a powerful spirillicidal action to sodium and potassium tartro-bismuthate. Nicolas, Massia, and Gaté[11] observed rapid disappearance of chancre and cicatrisation in from 8 to 12 days. In nine cases of syphilis treated with bismuth, Pasini[12] observed the rapid disappearance of treponema after the first injection (24 to 48 hours). The drug provoked a very rapid cicatrisation of syphiloma, of which infiltration was more slowly reabsorbed. Induration might persist for several weeks. There is, according to Pasini, a certain opposition between the cicatrisant action and the slower resolvent action. Disease of the glands appeared to be less beneficially influenced; however, the enlarged glands in the neighbourhood of the chancre quickly diminished in size. De Bella[13] treated seven cases of recent syphilis with trépol; according to him, results were steady and lasting, but not rapid. Bismuth approaches more to calomel than to the arsenobenzols. He speaks of the use of bismuth in syphilis as "a great and real acquisition, a new weapon for use against specific infection, a weapon of choice, particularly in those cases showing resistance against or intolerance of other drugs." Define[14] treated seven cases of syphilis (one primary) with sodium and potassium tartro-bismuthate in oily suspension, in doses of 0·2 to 0·3 g., and reported rapid disappearance of the treponema, with early cicatrisation of lesions. Ducrey[15] reported that in patients suffering from primary syphilis bismuth brought about a rapid healing of lesions, even when the latter were much ulcerated; glands disappeared and a huge ulcerated chancre was cured in a fortnight. The treponema disappeared from the surface of the ulcer after the first injection. Berthet[16] agreed with these findings. He found that in primary syphilis, with W.R. still negative (preserological stage), the results obtained up to the date of his communication were encouraging and seemed to indicate that bismuth, like the arsenobenzols, would prove a very useful sterilising agent. Grecho and Muschietti[17] observed that chancre was modified to a degree dependent upon the extent of infiltration and that primary lesions lost their induration; epithelisation and cicatrisation followed. Posadas[18] observed cure of chancres in from four to ten days.

Secondary Syphilis.

Grecho and Muschietti[17] reported rapid disappearance of non-ulcerated mucous patches and of hypertrophic papules, together with slower but evident clearing up of roseola and papular syphilides of iritis. Malignant syphilis was also successfully treated with bismuth, and roseola, papules, and condylomata rapidly cleared up (Bloch).[19] Spillmann[20] observed, in one patient, rapid disappearance of various cutaneous and mucous manifestations following intramuscular injections given every four days over a period of 36 days. Veber[21] reported a case where, after the fifth injection of trépol, a patient suffering from secondary syphilis with specific jaundice, and circinate rash and papular scrotal syphilides, the jaundice cleared up completely. The W.R. became negative after six injections. Jeanselme observed a general improvement after the fifth injection in a patient with febrile secondary syphilis and poor general condition. Pasini[13] stated that the conditions most readily treated with bismuth are mucous patches of the mouth, genital organs, and peri-anal region. He observed cicatrisation of these papules within a few days; hypertrophic papules of the scrotum disappeared in from three to four days. On the other hand, papular infiltrations (papulo-lenticular and papulo-squamous) appeared to be more resistant to bismuth. Define[14] noted that the W.R., positive before treatment, became negative soon afterwards; he used bismuth with success (sodium and potassium tartro-bismuthate) in cases of persistent headache. Ducrey[15] observed that in secondary syphilis the effect of trépol was a remarkably rapid cicatrisation of mucous patches and condylomata (in 12 days, after the third injection). Spirochætes were destroyed in these lesions after the second injection. In a case of hypertrophic mucous patches of the tonsils and soft palate the latter were healed in a week. Fifteen days sufficed for disappearance of roseola. Truffi[22] found that with this drug secondary manifestations were rapidly cleared up, that a few days after the beginning of treatment spirochætes were no longer found in lesions where they had been very numerous and that the humoral reactions tended to become negative. Berthet described rapid cicatrisation of lesions. Wallon,[24] in a recent communication, stated that mucous papules disappeared most frequently after two injections, and sometimes after the first injection—i.e., in from four to five days of treatment with trépol (in from 5 to 20 days, according to Posadas). With colloidal bismuth, mucous papules became cicatrised, according to the degree of infiltration, in from 6 to 15 days. Using neo-trépol, I have personally observed cicatrisation of buccal mucous papules within four or five days, and disappearance of treponema after the first or second injection. The same effects are obtained in the treatment of hypertrophic papules, roseola, and palmar syphilides. Headache, fatigue, and osteocopic pains frequently cease after the first injection.

Tertiary Syphilis.

Fournier and Guenot[25] reported great benefit derived from the use of trépol in syphilitic periostitis and in cutaneous lesions with encrusted ulcers. They also observed excellent effects in two cases of aneurysm of the aorta. Grecho and Muschietti and Berthet noted very rapid cicatrisation of cutaneous lesions; Fournier and Guenot, and Bloch reported rapid disappearance of gummata. In two cases of tertiary syphilis (crusted ulcers) of the buttock of 12 years' duration and not previously treated, cicatrisation was obtained after seven injections of tartro-bismuthate and one month of treatment. Another case was a chancre-like lesion of the fourchette which became cicatrised after two injections of tartro-bismuthate (Wallon). Bismuth treatment is of great benefit in the specific headaches and general malaise of tertiary syphilis; Ducrey reported cure of an ulcerated gumma of the soft palate in 20 days. Pasini reported excellent results in two cases of tuberous syphiloderma, in two cases of multiple dermo-hypodermic gummata, in a case of gummatous osteo-periostitis of the tibia, and in a case of necrotic osteo-myelitis of the cranial bones. Re-absorption of infiltration and cicatrisation of open lesions was obtained in a month, after from eight to ten injections. Posadas has reported concerning the action of trépol in syphilitic endarteritis. I have seen rapid regression of tertiary lesions as a result of bismuth treatment (trépol and neo-trépol).

Syphilis of the Nervous System.

Various statements testify to the benefit derived from bismuth in treatment of syphilis of the nervous system. Frequently, in these cases, resistance against arsenic has developed, and bismuth has been the more valuable on this account (Hudelo,[26] Milian[27]). Dessert has reported considerable amelioration in

acute meningitis and chronic syphilitic meningitis. In two cases of general paralysis mental trouble was clearly relieved, and in one case locomotor troubles were greatly diminished. A. Marie and Fourcade[28] also obtained favourable results. Tixier[29] found a case of heredosyphilis of the nervous system to be distinctly benefited by tartro-bismuthate. Localised lesions benefit most from the treatment. Tabetics suffering from repeated gastric crises, again, are considerably benefited by trépol and neo-trépol.

Serological Action.

Fournier and Guenot were the first to study the action of bismuth on the W.R. They found that whatever the phase of the disease, the reaction was favourably affected; sometimes the latter became negative before the end of the first series of injections. The following are my own results, already reported,[1] in this connexion.

—	Negative.	Partial.	Positive.
Primary syphilis—	Per cent.	Per cent.	Per cent.
Before treatment	8	25	67
After treatment	63	37	0
Secondary syphilis—			
Before treatment	0	28	72
After treatment	90·5	4·5	5

Bloch[19] found that the W.R. was not affected to the same degree as the clinical symptoms. The W.R. is generally rapidly weakened, but almost always requires several weeks, even two months or more, before becoming negative. For this reason Bloch employs bismuth in combination with arsenical preparations. Similarly Sedlak[30] found that combined treatment (trépol and neosalvarsan) results in the W.R. becoming more rapidly negative. Posadas[18] found that with bismuth the W.R. became negative more rapidly than with mercury, less rapidly than with arsenic. Pasini[12] investigated the action of bismuth in the W.R. and Sachs-Georgi reaction, and found it slow and often incomplete. Thus, patients who had left hospital, after having had 10 or 12 injections and a total dose of 2·5 or 3 g. trépol, showed only a lessened reaction, not a reaction completely negative. Wallon[31] showed that the sero-reaction, even when it remained partially positive, was always distinctly bettered. Wallon found the W.R. negative in two cases of primary syphilis treated with tartro-bismuthate. In the secondary period, the reaction was negative 8 times in 16—i.e., in 50 per cent. of cases. With colloidal bismuth the W.R. became negative twice in eight cases.

Sirum,[32] attempting to compare the weights of drugs (bismuth and novarsenobenzol) employed to render negative the W.R. in recently-acquired and active syphilis, found that this process required a mean weight of 2 g. tartro-bismuthate and of 0·5 g. precipitated bismuth or colloidal bismuth (neo-trépol). To obtain the same result, 5·6 g. novarsenobenzol were required. Defiue obtained a satisfactory result in two cases. Ducrey, on the contrary, affirmed that in all his cases trépol had no effect on the W.R.; this statement, however, does not disprove the anti-syphilitic value of bismuth. It is known, of course, that even with arsenic the reaction does not become negative, in certain cases, until some months after treatment; but no one contests the value of arsenical preparations. From all these results it is clearly too early to state that the W.R. will remain definitely negative after a single treatment with trépol. But it can be stated that from the point of view of its effect upon sero-reaction bismuth is comparable to the most valuable anti-syphilitic remedies.

Bismuth in Cases Resistant to Arsenic and Mercury.

Several writers have commented upon the value of trépol in cases of syphilis recurring after arsenical or mercurial treatment. Fournier and Guenot,[7] for instance, report the clearing up of lesions after three or four injections of tartro-bismuthate. Dessert reported good results in cases resistant against arsenic, and Wallon[24] also, the latter including cases resisting mercury as well as arsenic. Milian[27] obtained, with a fifth injection of bismuth, a cure in a case of long-standing generalised papular syphilides, which had resisted arsenic and mercury. Tixier[29] reported a case of heredo-syphilis of the nervous system, which had resisted arsenic, but was rapidly ameliorated with trépol; Guibert[33] observed a chancre which continued to grow after 6·25 g. neosalvarsan and injections of calomel, but which was cured after eight injections of trépol. Rezende[34] speaks highly of trépol in cases of syphilis resisting arsenic and mercury. Resistance against arsenic and mercury have been frequently observed, and such resistance must also exist against bismuth; Lortat Jacob and Roberti[35] have described a single case—secondary syphilis intensively treated with a bismuth salt. Mucous papules appeared during the treatment; after seven injections of 2 c.cm. (1·4 g.) of the salt on 20 days, the patient was covered with mucous papules in which treponema formicated.* This is the only known case of resistance against bismuth. The latter drug, then, appears superior to other specific remedies, in the light of absence of recurrence, and of its usefulness in cases where arsenic and mercury have failed.

Toxicity, Posology, and Method of Application.

In collaboration with Sazerac I carried out investigations into the toxicity of bismuth in the rabbit. It required 200 mg. sodium and potassium tartro-bismuthate per kg., given subcutaneously, to kill a rabbit; intravenously, only 5 mg. were required. In oily suspension this preparation is no longer toxic; this form—i.e., trépol—is used in treatment. The symptoms which most frequently follow the injection of bismuth are a bismuth line on the gums, grey-blue or slate-coloured, and stomatitis—phenomena reported by Dalche and Viljean[36] as early as 1889. According to the researches of Azoulay[37] and Milian and Perin[38] a deposit of bismuth sulphide occurs in the cells of the dermal connective tissue, principally in the vascular endothelium. From the point of view of prognosis, bismuthic stomatitis is much more favourable than the mercurial form. It is usually found in subjects who take no care of their mouths. Wolfer, making a radiological examination of the gradual absorption of bismuth, found the process to be very irregular.

Bismuth is eliminated (1) by the kidney, (2) by the salivary glands, and (3) by the digestive system. Demelin[39] and others report that bismuth is found in the urine 18 hours after injection of soluble salts, and 24 hours after the injection of insoluble salts. Steinfeld and Meyer[40] found no more bismuth in the urine after 18 hours. Fournier and Guenot[35] found the elimination to be prolonged over 30 hours. According to Pasini[12] bismuth is already in process of elimination in the urine half an hour after injection. The elimination is quantitatively irregular. Ducrey observed bismuth in the urine 26 hours after injection, and remarked that it persisted a long time after the cessation of treatment. Azoulay found bismuth in the saliva 24 hours after the injection of trépol. By the large intestine bismuth is eliminated in the form of bismuth sulphide. Demelin observed bismuth in the bile, blood, and cerebro-spinal fluid.

The insoluble preparations trépol and neo-trépol should be used for intramuscular injection. Injection should be carried out with a 5 c.cm. syringe and a sufficiently large needle, as the liquid is sometimes thick. The most favourable region for injection is the whole of the superior gluteal area Injections should be made alternately into either side, not too close to the site of previous injections. The intravenous route is too dangerous. The dose of trépol should be 2 c.cm. (0·2 g. of the active preparation) repeated every three or four days, until a total dose of 2·8 or 3 g. has been reached. The series of injections should

* It may be wondered whether in this case the use of trépol, or better still of neo-trépol, would not have overcome the resistance of the treponema.

be repeated after an interval of a month, until the W.R. becomes negative.

Various Bismuth Derivatives.

As I have stated, most workers have used the intramuscular route of injection; the intravenous route has been more rarely used. After numerous experiments with other bismuth salts, I prefer trépol (sodium and potassium tartro-bismuthate) which has given me the best results. Grecho and Muschietti used basic salicylate of bismuth for intramuscular injection, which seemed to them to be better tolerated (3 g. in 20 days) and more active in manifestations of secondary and tertiary syphilis; by the intravenous route they injected bismuth iodide. Bloch, having used bismuth citrate at first, now uses the painless trépol. Soluble tartro-bismuthate was used in glucose solution by Jeanselme and his collaborators. Fourcade experimented with bismuth oxide. Fouard and Wallon tried colloidal bismuth by the intravenous route (bismuth ionoid).

Finally, working with Sazerac[41] I have perfected the preparation neo-trépol, manufactured by Messrs. Chenal and Douilhet, Paris. It consists of metallic bismuth in suspension in a sterile isotonic solution. This preparation contains 95 per cent. of metallic bismuth; it is well tolerated and possesses remarkable therapeutic power in all three stages of syphilis. When neo-trépol is used, buccal symptoms are very rare and pain practically non-existent. At present I prefer neo-trépol to all other preparations; it may be used for intramuscular injections, in doses of 1·5 to 2 c.cm. repeated every three or four days. It is now in routine use at Dr. Fournier's clinic, at the Hôpital Cochin, Paris. Our researches have been confirmed by Barrio de Medina.[42]

Conclusions.

In the light of the above description of the influence of bismuth in syphilis, I feel I can maintain the conclusions published by me in July, 1922.[1] Sodium and potassium tartro-bismuthate and metallic bismuth achieve rapid cicatrisation of syphilitic lesions at all stages of the disease. Although bismuth has only been recently employed, I have every reason to believe that, when used early and in sufficient quantity, it will cure syphilis. The absence of recurrences of the disease, and the effect on the W.R., only serve to confirm this opinion. Equal, from a therapeutic point of view, to arsenical preparations, better than mercurial preparations, bismuth (trépol and neo-trépol) is a valuable antisyphilitic remedy, particularly in those manifestations of the disease which resist the action of arsenic and mercury.

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A NOTE ON
SERUM DOSAGE IN DIPHTHERIA.

BY CLAUDE B. KER, M.D., F.R.C.P. EDIN.,
MEDICAL SUPERINTENDENT, CITY HOSPITAL, EDINBURGH.

A FEW months ago a Memorandum[1] was issued by the Ministry of Health which very properly emphasised the necessity for the prompt administration of antitoxin in all cases suspected to be diphtheria. Those of us who have had the opportunity of observing, only too frequently, the lamentable results due to late diagnosis and treatment are naturally in complete agreement with the advisers of the Ministry so far as the general principle is concerned. We are, doubtless, equally convinced that far too many lives have been, and are being, lost owing to a want of appreciation on the part of the general practitioner of the importance of early injection and of the grave risks entailed by waiting for bacteriological confirmation of a provisional diagnosis. I am inclined to believe that so far from the situation improving in this respect it is actually worse than it was ten years ago, and I attribute this fact to the unreasonable dread of anaphylactic shock which undoubtedly disturbs many practitioners. So far as the diphtheria patient is concerned I am tempted to agree with a well-known French authority, Comby, that it is a pity that anaphylaxis "ever emerged from the laboratory where it took birth."

Dosage after Provisional Diagnosis.

The question, however, which I wish to discuss is that of dosage. The advisers of the Ministry recommend that a dose of 8000 units should be given immediately in any case provisionally diagnosed as diphtheria. We may admit at once that such a procedure is both safe and efficient. But is it really necessary? Does it not savour a little of the view that one cannot have too much of a good thing? Does it not, moreover, show that lordly disregard of expense which before the war we were accustomed to associate with Government departments? If this dosage is adopted generally the amount of serum used in this country will be certainly doubled, if not trebled, and, as the cost in the long run will fall on the luckless ratepayer, it may not be out of place to consider how far this extra expenditure is necessary.

A minimum dosage of 8000 units suggests a want of faith in the efficacy of antitoxin, which is surely not justified by experience. I do not for a moment imply that large amounts of serum are not often desirable and necessary. In my own practice severe cases are treated with total doses of from 30,000 to 50,000 units, and it is usual to administer at least 16,000 or 20,000 units to patients, who, in addition to faucial lesions, show any sign of laryngeal or nasal involvement. On the other hand, I firmly believe in the efficacy of the small dose for patients suffering from a moderate or mild attack of diphtheria. In support of this view I would refer to the fact that the remarkable fall in the case mortality which followed

[1] Ministry of Health. Memo. 68/med. Diphtheria.

the original introduction of serum treatment was undoubtedly effected by very moderate and even actually small doses. Later on we certainly obtained better results by increasing the dosage, but the improvement, while sufficiently obvious, was in my experience not nearly so striking. Such a great authority as Baginsky, writing in 1913, recommends doses of from 3000 to 4000 units for cases which we would describe as severe, for instance, infants with laryngeal obstruction. In similar circumstances I would not nowadays venture to give an initial dose of less than 8000 units, and would expect to have to repeat it, but I can remember many cases in old days in which even so small a dose as 3000 or 4000 units proved sufficient.

Scales of Dosage.

There is probably no public body which has taken more active interest in the prevention and treatment of diphtheria than the Board of Health of New York. A circular issued with its antitoxin suggests a scale of dosage for which, no doubt, Dr. William H. Park, the Board's well-known laboratory expert, is responsible. For "mild" cases 2000 to 5000, for "moderate" 3000 to 10,000 units are recommended, and it may be noted that the higher figures refer to adults, the dosage being graduated by weight. Thus from 2000 to 5000 units is considered sufficient for a "moderate" attack of diphtheria in an infant of under two years of age.

My own practice has been to take as a standard a case in which the tonsils are covered with undoubted diphtheritic exudation, but in which there are no other lesions. For such a case 4000 units appear to be sufficient, and this dose is not exceeded unless the patient presents undue glandular enlargement or evidence of severe toxæmia. If, on the other hand, the pillars of the fauces, the uvula, the palate, or the posterior pharyngeal wall are also implicated, an increase in the dose proportionate to the extent of the exudation, is made. For instance, if the pillars on one or both sides are involved in addition to the tonsils the dose would be 5000 to 6000 units; if in addition to that the uvula or palate is implicated it would probably be 8000 units. Cases in which nasal discharge or croup is also present usually receive an initial dose of 10,000 units, and this dose is repeated at 8 or 12 hourly intervals as required. Conversely, if the lesions presented are less extensive and the tonsils are only partly covered or only one is affected a dose smaller than 4000 units may be safely given.

To give a concrete example: A week or two ago a scarlet fever convalescent developed diphtheritic patching on both tonsils, the membrane covering about half the surface of each. Of the clinical diagnosis there was no doubt whatever. The dose given was 3000 units, and by the time the inevitable positive report came next morning from the laboratory the throat was quite clean. Such a result I have found quite common in my experience of post-scarlatinal diphtheria. Otherwise I need hardly say I would not have relied on such a small dose.

Results of a Single Dose in a Series of Cases.

With a view to a possible revision of this scale of dosage I have extracted from my records the results of 1000 cases which received a single dose of 4000 units. From what has been said above it is clear that the vast majority of these patients had tonsillar lesions only, but that the tonsils were well covered. Unfortunately the series contains a small minority who were given 4000 units on other indications. Many of these were small infants with very slight faucial lesions, but apparently ill from other causes and sometimes admitted late in their illness. Of the 11 deaths which occurred in the 1000 cases in the series more than half fall into this group, no less than six being definitely attributed to bronchitis, pneumonia (2), pyelitis, meningitis, and congenital syphilis. The remaining five deaths were probably due to diphtheria, one in particular being due to heart failure following palatal paralysis. The patients were in all cases admitted late, from the fifth to the eighth day of illness, and it is extremely doubtful whether larger doses could have affected the result. While it is natural enough to regret that any fatal case of diphtheria should have received so small a dose, a loss of only five patients out of over 900 suffering from unquestionable clinical diphtheria involving both tonsils does not suggest that small doses of serum are inefficacious. The paralysis-rate in this series was exactly 1 per cent.—that is to say, that 10 patients developed paralysis, which in every case except one was limited to one situation, usually the palate. The remaining patient suffered from sixth-nerve paralysis also.

It must, of course, be understood that, while this series of patients received a single dose only and did not in my judgment require more, a certain proportion of the individuals who get an initial dose of 4000 units will undoubtedly need a second injection, given either in the rare instances in which definite extension is noticed after the first dose, or, more commonly, for the persistence of the lesions. As my ward books only show the total dose, and it would be necessary to hunt through the charts of many years to trace all the patients who, during the period covered by the 1000 single-dose cases, required further treatment, I must content myself with the records of the last few years.

Of the last 377 cases which received an initial dose of 4000 units only 44, or 11 per cent., had second injections. Of these three terminated fatally, two of the patients having been admitted on the fifth and sixth day of their illness. Paralysis occurred on five occasions. I am willing to concede that these results might have been better, if only slightly better, had these patients received 8000 units on admission. Nevertheless, on looking over the above figures I would submit that on the whole the dosage employed has been justified.

It would be possible, were it worth the trouble, to produce a similar series of cases treated with 3000 units only. It would probably show neither deaths nor paralyses. This dose has usually been given for one tonsil well covered or for follicular lesions on both tonsils. Some of the cases, however, were little more than bacteriological diphtheria. Still, I presume it is for these, as being doubtful or suspicious, that the Ministry recommends 8000 units. It may be added that, although thousands of cases have been treated with doses of 1500, 3000, or 4000 units only, I have never seen extension to the larynx occur in a patient admitted with the larynx free. In the days before antitoxin our experience was very different, and I think this record is strongly in favour of the efficacy of relatively small doses.

Conclusion.

In conclusion, large initial doses are certainly necessary for severe cases. For mild and moderate attacks the small dose may be relied on. Those of us who have to consider the price of antitoxin and to contemplate an annual serum bill of perhaps £600 or £700 cannot put the question of economy entirely on one side. If a small dose can reasonably be regarded as sufficient we have no right to expend public money unnecessarily. It is mainly for this reason that I have ventured to raise this question. But I find that some of the medical men in charge of small fever hospitals have been disturbed by a Memorandum which suggests that a system of dosage with which they have been quite satisfied is radically wrong, and I also feel that I should defend methods which have been taught to all my students over a long period of years, and which I see little reason to alter. My chief complaint against the general practitioner, however, is not that, when he is waiting for a bacteriological report, he gives too little antitoxin, but that he gives none at all. If he gave only 2000 or 3000 units as a routine every time he thought it advisable to take a swab I believe there would be a phenomenal fall in the case-mortality of diphtheria.

SYPHILIS AND MARRIAGE.*

BY AMAND ROUTH, M.D., F.R.C.P. LOND.,
CONSULTING OBSTETRIC PHYSICIAN TO CHARING CROSS HOSPITAL.

THE association of syphilis and marriage is the cause of more individual, social, and national trouble than any other disease affecting family life. Obviously, syphilis and marriage should never be associated, and yet, though this is realised by health authorities, doctors, and legal experts, it is only beginning to be realised by the State and by the nation at large.

Prevention of Infected Persons from Marrying.

The difficulties, therefore, which doctors experience when they try to prevent a syphilitic patient from marrying are largely due to the absence of general education on the subject, to the inadequacy of the law of libel to protect them, and to the absence of legal penalties for one person infecting another. Sex knowledge and hygienic education on sexual subjects are doing much to enlighten parents as regards the risks which their children run, especially their daughters, if one of them should marry a person who has previously contracted a venereal disease, and they try to satisfy themselves regarding their proposed son-in-law's fitness for marriage, perhaps getting his doctor to reassure them on the subject.

What can a doctor do to prevent his patient whom he is treating for syphilis from marrying? He can, of course, take an early opportunity to warn his patient that he should not marry till he is, in the doctor's opinion, safe from infecting his proposed partner and their offspring. This warning may, even with intensive treatment, involve a delay of two years before marriage would be safe, and the patient, though very impatient, will usually accept the advice. But this is not always so.

What should a doctor do if he hears that his patient, still in an infectious stage, is going to get married? The Royal Commission on V.D., pp. 56 and 57, Final Report (par. 203), states: "We are informed, however, that a question of much difficulty arises where a practitioner is aware that the advice given to his patient will not be followed and that the marriage will probably proceed."

Professional Confidence.

In such circumstances a doctor cannot, without breach of professional confidence, warn the intended partner, or his or her parents, of his patient's ill-health; and in addition to such a warning being a breach of professional confidence, it would, if in writing, be a libel, if by word of mouth a slander.

The Royal Commission stated that "in a civil action proof of the truth of the defamatory words affords a complete defence, and in criminal proceedings, if the jury found that the defamatory words were true in substance and in fact, and that it was for the public benefit, the defendant would be entitled, under Lord Campbell's Act, to judgment in his favour" (par. 204). The Royal Commission continues, however, "any allowance of costs would usually be a very inadequate compensation for the loss of time and for the trouble caused even by a successful defence." The Royal Commission concludes (par. 205) by saying that "a change in the law in this respect is much needed," and added "that such a communication made *bona fide* should be deemed to be a privileged communication." I cannot find that any change in the law has been made.

"Privileged" Communications.

Dr. Edwin Smith, lecturer on forensic medicine at St. Thomas's Hospital, barrister-at-law, states[1] that amongst the communications now held to be "privileged" are those "made by a doctor to a husband concerning his wife, or to a wife concerning her husband, for the doctor is then immune from legal liability." Dr. Smith adds that "though legally on safe ground, such a communication may be highly indiscreet." Obstetricians and general practitioners are often up against difficulties of this type. The treatment by injections of salvarsan, now indicated for a pregnant woman after previous syphilitic stillbirths, is much more difficult to explain to a wife than when mercury alone was given. I am sure that from the obstetrician's point of view it is much wiser for him to explain the position to the husband, and try to get him to give such information as he may deem advisable to his wife as regards the need for the treatment indicated: for with the knowledge that now exists regarding the causes of stillbirths, and the modern treatment of syphilis, she would not long remain in ignorance of what is happening.

The Need for Treatment Till Cured.

Another difficulty which occurs during the treatment of patients, whether hospital or private, whether married or unmarried, is the frequency with which they cease treatment before being cured. If you hear that such a patient who has ceased attendance is going to marry, and you know that a cure has not been obtained, the fact that he has ceased to be under your care does not alter your position as regards breach of professional confidence. It would make any interference on the doctor's part more difficult. As a gynæcologist, I am only consulted by women, and if it is a young woman of mature age, she usually expects to be treated without her condition being revealed even to her mother. Since the modern treatment of syphilis has come in I never treat such cases myself, but I expect venereal experts will agree with me that a woman, even more frequently than a man, will cease attendance after the local and skin evidences have abated, and you cannot write and endeavour to retrieve her for fear of the letter going astray.

Notification of Syphilis.

Notification of syphilis would make the prevention of venereal marriages more possible, and would more easily ensure the continuance of treatment till cured, and would also make the means for the retrieving of a patient more likely to succeed. But compulsory notification, even if impersonal, would lead infected persons, especially young women, to postpone consulting a doctor; and if the symptoms have abated early, as they often do in women, they will ignore the need for treatment altogether. In Australia and U.S.A., where notification has been compulsory for some years, the proportion of cases ceasing attendance before being cured is from 12 to 19 per cent., and of these 44 to 59 per cent. have been retrieved. The difficulty of enforcing attendance in these cases is sometimes very great, and in some cases, as the Royal Commission stated, "it involved compulsory detention and would work unequally and chiefly upon those who had brought themselves under restraint." Compulsory notification, without compulsory treatment till cured, would not be of much use.

Health Certificates.

If health certificates before marriage were legally required from both intending partners the doctor's difficulties would be much lightened. There would be but little national resistance to getting this done to avoid marriage in cases of possible tuberculosis, heart disease, mental instability, alcoholism, or drug-taking, but compulsory health certificates would be difficult to get legalised and adopted as regards venereal disease. Indeed, it is just because venereal disease would have to be one of the conditions to be inquired into, and, if need be, investigated, that any form of compulsion in this direction is precluded from adoption, for it would often be impossible to examine young girls, even if local soreness, pruritus, or a discharge was admitted. It would sometimes also be difficult, even with the present tests, to determine whether a man or woman previously infected, especially if treated by someone else, is free from infectivity and fit to marry. Sooner than face such a test many a couple would remain unmarried or would migrate to a locality where compulsory notification or health certificates are not

* A paper read before the Medical Society for the Study of Venereal Diseases on March 23rd, 1923.

[1] Dr. J. S. Fairbairn's "Practitioner's Encyclopædia of Midwifery, &c." 1921. Pp. 773–4.

in force. The Royal Commission on Venereal Disease realised the difficulty of arranging for health certificates for marriage, and considered that "it would not be possible at present to organise a satisfactory method of certification of fitness for marriage."

I have thought much of how some form of health certificate before marriage could be introduced. One valuable suggestion has been made—viz., that all persons desiring marriage should insure their lives in some reliable and recognised insurance company. The examination required to secure an A1 policy would not necessarily be a proof of absolute health, but if a previous infection had been present there might be a refusal to grant such a policy, and this would lead to further investigation. Such policies could be usefully included in the schedules of marriage trusts. For poor people, who would mainly be panel patients, the nation would have to grant the expenses of an examination and the provision of a policy for healthy couples, but this would involve national expenditure, impossible probably to provide under our present financial circumstances.

In the absence of health certificates being legalised, if a young man contemplating marriage is asked a few tactful practical questions by his fiancée's parents or family doctor, and it happens that he has to admit that he has been infected, it will make him pause and perhaps consult his own doctor again. I have known cases where as a result he has been advised to postpone marriage for two years or so, so as to have other tests and further treatment, perhaps in the interval going abroad on foreign service. This often means that the engagement is eventually broken off, and the woman makes a healthier marriage to another partner.

Syphilis Discovered After Marriage.

I have known many couples, one of whom had been recently infected, who have married with disastrous results. Sometimes the infected partner has been ignorant that he had been infected; sometimes he had been told or thought he was cured; sometimes his wife knew of his previous infection without realising the risk of marriage. Sometimes a man has married after being warned that he is not cured. Such a man would endeavour to avoid infecting his wife by adopting methods which at the same time would prevent the risk of conception. The wife of such a man consulted me because of having suspicions after seven years of marriage. Her husband, who had recently died, had told her that she was not in a fit state to conceive, and had adopted a male contraceptive, and had got his wife to apply a daily mercurial inunction without explanation. She was tested and found to be perfectly healthy, and subsequently married a healthy man and had healthy children.

Matrimonial Laws Regarding Venereal Disease.

In his evidence before the Royal Commission on Venereal Disease in 1914,[3] Sir Samuel Thomas Evans, President of the Divorce Court, stated that if a wife establishes the fact that she suffers from a venereal disease, and that she has been faithful to her husband, she can get a divorce if she can prove that her husband had acquired the disease after marriage, for the infection would be a proof not only of legal cruelty, but also of adultery. If the disease had been acquired before marriage and was conveyed "knowingly or negligently" it would constitute legal cruelty, but not adultery, and the woman could only obtain an order for judicial separation, which, as the Royal Commission states in its Final Report (par. 173), "is a very inadequate remedy, especially in the case of the poorer classes."

Treatment of Syphilis During Marriage.

Before 1905, when the *Spirochæta pallida* and the Wassermann test for syphilis were unknown, it was difficult and often impossible to be sure that husband or wife had been infected; especially as the husband might deny previous infection and might have no clinical evidences of having been infected, while his wife often had nothing definite which could draw attention to a recent infection, no local sore being recalled, and a passing rash being forgotten or ignored. Abortions or dead children or congenitally syphilitic offspring were often in those days the chief or only evidence of marital infection. Inquiries from the husband might reveal that he had syphilis many years previously, that he had been treated carefully and was declared to be cured and able to marry with safety. If clinical evidences of syphilis were present in either of the partners, treatment of both was held to be indicated.

Twenty years ago treatment was by mercury in different forms, and if the husband allowed it, it was easy to treat the mother with pills which she could be honestly informed were likely to make her better prepared for a future pregnancy; or if she were already pregnant or had had abortions or stillbirths she could be easily encouraged to be treated so that these intrauterine deaths should cease. This could be done without making her suspicious of the venereal condition. One such case in 1899 I may briefly state, and it is the type of history which often occurred then.

Mrs. A. B., aged 25, married four years; two abortions and two stillbirths. Both partners wished to have a healthy child. No history of syphilis could at first be obtained and there was no evidence of it in either partner. The stillbirths had not been examined. Three months later I found her six weeks pregnant, and I again interviewed her husband, who admitted having been treated for syphilis over 12 years previously. I put her on pills containing 1/16 gr. of hydrarg. perchlor. t.d., and delivered her of a healthy child at full term. She became pregnant again in eight months, but the husband, being satisfied with his healthy son, refused to further entertain my diagnosis, and she was delivered of a puny child who later developed typical congenital syphilis and died when 5 months old. She became pregnant again and was allowed to take the pills and had another strong healthy child. The parents and both the children are now, I am informed, in perfect health.

In those days, as there was almost always no evidence of infection in the mother, she was only treated during pregnancy. It was thought then that the children had become infected by the seminal fluid infecting the ovum when fertilised, and that the mother might not be herself infected. We now know that if a woman has syphilitic offspring she is herself infected. For this reason, when treatment by salvarsan and its substitutes began, the apparently healthy woman was at first only treated during the pregnancy, as the main point was that the child might be born healthy. This good result to the child was almost invariable. Then later on experience showed that the next child might be syphilitic if the mother was not again treated during her next pregnancy. It was soon realised that the treatment of both the mother and child must be continued after parturition, usually by mercury as well as salvarsan. Some pathologists state that if the mother continues to give a negative reaction to the Wassermann test she need not be treated during subsequent pregnancies. It is, however, well known that the Wassermann reaction of the mother is irregular during pregnancy and not very reliable, for even if positive before pregnancy it may become negative during pregnancy, during the latency of the infection, and for some time afterwards. If no maternal treatment during pregnancy has been adopted, the child may be born negative, but becomes positive after a few weeks if congenital syphilis is about to develop.

In 1914, in my Presidential Address at the Harveian Society, printed in THE LANCET of Jan. 10th, 1918,[3] I drew attention to the probability that during pregnancy the chemical products arising from the trophoblastic action of the placental villi have a controlling influence over the biological activity of the infecting spirochætes, probably by breaking them up into granules, which may remain quiescent and latent during the pregnancy.[4] After pregnancy, when the placental chemicals gradually disappear in both mother and child, the granules if not already devitalised, will

[3] Appendix to Final Report, p. 285, Q. 21,093.

[3] Reprinted by request in Amer. Jour. of Syph., ii., 3, July, 1918.

[4] Noguchi has made between 1910 and 1917 cultures from granules, derived from *S. pallida*, which have later on sprouted and have developed into the mature organism which has retained its infectivity. (Amer. Jour. of Syph., April, 1917, pp. 320–3.).

sprout and develop into the full-grown spirochæte and syphilis will declare itself. The mother is more likely to be better protected than the separated child, especially if pregnancies are repeated. So long as the fœtus is protected by this granulosing of the spirochætes treatment can be successfully adopted at even the last few weeks of pregnancy and the potential activity of the latent granules will be permanently arrested, probably by their destruction. The latency of syphilis during pregnancy is now generally accepted. Exactly how the spirochæte is rendered latent is not yet known. An earlier stage of the mature organism is also conceded by many.

The pioneers in the treatment of ante-natal syphilis are well known and the results are more startling and the success greater than any could have imagined ten years ago. Almost all children (probably 90 per cent.) thus treated have remained healthy for several years and some have been watched for seven years, and the mothers who have had ante-natal and post-natal treatment also remain negative and have other healthy children.

These results prove conclusively that even if we cannot prevent infected men and women from marrying and having children (for syphilis does not tend to sterilise either men or women), we can, with our present knowledge, by treatment of the mothers during pregnancy, enable healthy children to be born, and by continuing the treatment of the mothers and children after parturition we can, in each such family, almost entirely prevent the occurrence of congenital syphilis. Probably this success would be rendered more certain if the father were also treated. This should certainly be done if his Wassermann reaction is positive, and some experts would consider that the father should be treated in any case where syphilis was clinically present in the offspring, even if his tests were negative, as his seminal fluid may be infective, perhaps by presence of granules only, for the mature organism is stated to be very difficult to find in it.

I wish further research could be made as regards this question of seminal infectivity. After the discovery of the *Spirochæta pallida* in 1905, it was found that the organism was larger than the head of the spermatozoon, and the conveyance of the infecting agent by the mobile sperm was viewed as impossible, and the belief in seminal infection of the ovum in the Fallopian tube or in utero was largely given up. When Noguchi showed that the spirochæte could spontaneously break up into sprouting granules, so small that they could easily be carried by seminal fluid or spermatozoon, the idea was revived. If these sprouting granules are a stage in the life-history of the spirochæte, as I believe, seminal infectivity must be reconsidered as an alternative to infection through the mother's blood. In either case the chemical products, already alluded to as arising at the point where the maternal and fœtal circulations come into contact, appear to be usually able to protect both mother and child from clinical syphilis, at all events during the pregnancy. If all doctors and inspectors of midwives could get their women patients who have a history of abortions and stillbirths or infected offspring put under expert medical supervision, especially if pregnant, so that modern ante-natal and post-natal treatment of mother and child could be adopted where syphilis is diagnosed, congenital syphilis would become increasingly rare.

The treatment of a congenital syphilitic child, begun only after birth when the latent period of syphilis is over, is very unsatisfactory, especially if the Wassermann reaction is positive. Success in dealing with ante-natal syphilis should not, however, allow doctors to relax any of their efforts to prevent marriages of infected adults. The Ministry of Health has appointed a Commission, which is now sitting, to investigate the best methods to be adopted to prevent the spread of venereal infection. I hope the Commission will especially consider what further steps can be taken to eradicate congenital syphilis, by ensuring a more efficient medical supervision of women during pregnancy, and by making expert venereal treatment more generally available when indicated.

A CASE OF
MIDDLE MENINGEAL HÆMORRHAGE.

BY A. B. KEITH WATKINS, M.S. LOND., F.R.C.S. ENG.,
CLINICAL ASSISTANT, SURGICAL OUT-PATIENTS' DEPARTMENT, LONDON HOSPITAL.

THE following case combines a number of unusual features. On Feb. 11th, 1922, the patient, a window-cleaner, aged 24, was admitted to the Seamen's Hospital, Greenwich, under the care of Mr. Timbrell Fisher. Shortly before admission he had been picked up beside his broken ladder. Subsequent evidence showed he had fallen from a first storey window.

Condition on Examination.—On admission at 10.50 A.M. he was semi-conscious. When told in a loud voice to do so, he would perform movements such as putting out his tongue or bending a limb. He was pale and clammy; pulse 60; temperature 97° F.; respiration 32. A hæmatoma in the left orbit pushed the globe downwards and outwards and a subjunctival hæmorrhage was present. On the right side there was a small hæmatoma in the temporal region. The pupils were small and equal, and reacted to light. No signs of paresis, spasm, or difference in tone of the two sides of the body were detected. There had been no vomiting or external hæmorrhage. A diagnosis of concussion with probable fracture of the anterior fossa was made. At 12 mid-day no change was noted except that from the nose there had escaped a small quantity of blood which appeared more dilute than normal. At 2 P.M. the patient was deeply unsconscious and had vomited once. The tongue was falling back into the pharynx, causing respiratory obstruction; to relieve this it was transfixed and held forwards with a suture while the examination was continued. Respiration was now noisy and stertorous. The left orbital hæmatoma had become tenser, while the right temporal one had increased to several times its previous size and had become very tense. The right pupil was widely dilated and fixed, while the left was small and reacted to light. It was thought that the left side was more atonic than the right, but there were occasional spontaneous movements such as flexion and extension of all limbs. A diagnosis of right-sided compression (probably due to a middle meningeal hæmorrhage) was made, and the patient was prepared for operation. At 2.20 respiration was not so powerful and was definitely of the Cheyne-Stokes variety, there being periods of complete apnœa up to 20 seconds. The left pupil had commenced to dilate, but was still smaller than the right. At 2.30 periods of complete apnœa were present up to 30 seconds. The pupils were widely dilated, the right being only slightly larger than the left, and neither reacting to light.

Operation.—No anæsthetic was used. A U-shaped right temporal flap, including temporal muscle, was turned down, when a vertical fracture was exposed in the anterior part of the wound. A ¾-inch trephine circle was elevated at 1¼ inches behind the external angular process and a similar distance above the zygoma; much fluid blood escaped, and the patient at once began to breathe more deeply. The opening in the skull was enlarged with rongeur forceps and much recent clot evacuated. The anterior branch of the middle meningeal artery was found running on the dura and not in a bony tunnel. Alarming arterial hæmorrhage now took place deep in the anterior inferior part of the wound. To get at the site of this the zygoma was quickly divided in two places, and the opening in the skull enlarged downwards. However, the hæmorrhage was so free that even with rapid swabbing nothing could be seen in the depths of the wound, so temporary gauze packing was inserted and the right external carotid tied. The hæmorrhage now ceased. At the end of the operation the patient was breathing deeply and there was no sign of Cheyne-Stokes's respiration. While the skin sutures were being inserted it was necessary to restrain the patient's movements.

Four hours after operation he became deeply comatose again, Cheyne-Stokes's breathing became marked, the pulse rose to 160, and the temperature to 107°. The pupils were equal and no localising signs were found. Soon afterwards the patient died. It was thought that the cause of death was acute cerebral œdema.

Post-mortem examination showed a fractured middle fossa with extensions into the vault. On the right side the fracture had passed through the foramen spinosum, where the middle meningeal artery was found lacerated. No fracture of the anterior fossa was present, but on the left side the fracture had passed through the great wing of the sphenoid, involving the outer wall of the orbit. The dura was intact, but on the right side was separated from the skull over an area of 3 inches by 4. On the left side the dura was separated

from the skull by a clot 3 inches by 3. Apparently this had come from the anterior branch of the left middle meningeal artery, for there was an ecchymosis ¼-inch diameter in the dura at the site where this branch of the artery and the fracture crossed one another. The clot weighed 2¼ oz. No laceration or contusion of the brain was present, but there was a small subdural hæmorrhage at the right temporal pole.

Interesting Points in the Case.

1. *Bilateral Hæmorrhage.*—Rare cases have occurred. In 1750 J. Hill[1] removed 2–3 oz. of blood-clot from the right extradural space of a young man, and three days later a similar amount from the opposite side. A fracture was seen at each operation. In 1751 he[2] operated upon another man, aged 30, for right middle meningeal hæmorrhage. About 6–7 oz. of blood escaped; four days later the patient was worse and the other side was explored, where another 6–7 oz. of clot was found and removed. Both cases recovered, though the former patient was "sometimes liable to convulsive twitches, but they did not deprive him of his senses; and his memory at times failed him so far as to make him at a loss for words to express himself." Nathaniel Ward [3] has recorded the case of a man, aged 40, admitted to the London Hospital in 1854 under the care of Mr. Luke. Operation for right middle meningeal hæmorrhage was performed, and the patient improved for a time, but died 14½ hours after the injury. Post-mortem examination showed symmetrical detachment of the dura with a large clot occupying the space on the left side.

2. *Laceration of the Artery at the Foramen Spinosum.*—I can find details of only one other case. In 1902 Harvey Cushing[4] operated upon a young man of 24 for middle meningeal hæmorrhage of rapid onset. One hour before admission a beam had fallen upon his head; there was bleeding from the nose and both ears, but no concussion, and the patient stood up and answered questions. Half an hour later he was unconscious. On admission there was slight exophthalmos and the left pupil was larger than the right. During the next hour the stupor deepened, Cheyne-Stokes breathing occurred, and ptosis of the left eye became more marked. Operation was performed through an osteoplastic flap and the middle meningeal artery was dealt with at the foramen spinosum, into which the fracture was seen to pass. Unfortunately we are not told how this was done. It must have been difficult, especially as a skull tourniquet was in situ the while; also, hæmorrhage was probably severe, as the blood pressure was 250 mm. Hg. This case recovered.

3. *Ligature of the External Carotid Controlled the Hæmorrhage.*—It is well known that ligation of the external carotid will not stop hæmorrhage from its branches with certainty, although ligature without craniotomy has been advocated as a treatment of early middle meningeal hæmorrhage. In 1877 Howse[5] tied an external carotid after unsuccessful ligature of several branches of the middle meningeal artery. This stopped the hæmorrhage, but the patient died 16 hours later. Contusion of the brain was found post mortem.

4. *Orbital Hæmatoma may be due to Fracture of the Middle Fossa.*—The majority of orbital hæmatomata after fractures of the skull are due to fractures of the orbital plate of the frontal bone. When one considers that the great wing of the sphenoid, which forms part of the middle fossa, also forms part of the outer wall of the orbit, one cannot but be surprised that orbital hæmatomata are not commoner in fractures of the middle fossa. Marcus Beck[6] reported the case of a patient, aged 25, who was admitted to University College Hospital in 1877 with bleeding from the nose and a subconjunctival hæmorrhage supposed to be due to a fracture of the orbital plate of the frontal and cribriform plate of the ethmoid. There was also a left middle meningeal hæmorrhage. The patient died, and the fracture was found to pass between the foramen ovale and the foramen rotundum on one side through the sella turcica and through the great wing of the sphenoid on the side of the orbital hæmatoma.

Hyperpyrexia.—Considering its importance, little prominence has been given to a raised temperature as a symptom of acute extradural intracranial compression, whereas the occurrence of a low temperature in chronic compression is widely known. Cushing, in Keen's "Surgery," does not mention its occurrence. Trotter, in Choyce's "Surgery," mentions only unilateral raised temperature. Quervain[7] states that a high temperature points more to an intradural than to an extradural hæmorrhage. On the other hand, Wiesman[8] and Thomson and Miles give a rising temperature as a symptom of middle meningeal hæmorrhage. Rose and Carless mention that hyperpyrexia may occur when extradural hæmorrhage extends to the base. In middle meningeal hæmorrhage it is usual for the temperature to be low during the stage of concussion, but it rises progressively during the stage of compression. I have seen a similar rise due to acute extradural hæmorrhage from a lacerated superior longitudinal sinus. In Jacobsen's[5] series of 70 cases of middle meningeal hæmorrhage, hyperpyrexia was commoner where there was greater damage done to the skull. What the raised temperature is due to is not clear. Certainly it occurs in cases where there is no clinical evidence of injury to the pons, and where no sign of macroscopic injury to the pons or basal ganglia is found post mortem.

In conclusion, I wish to express my indebtedness to Mr. Timbrell Fisher for permission to publish this case.

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Clinical and Laboratory Notes.

A CASE OF ACUTE BILATERAL SUPRARENAL HÆMORRHAGE.

BY A. G. MILLOTT SEVERN, M.D. BRUX., D.P.H. CAMB.

ACUTE non-traumatic hæmorrhage of the suprarenal bodies is an infrequent pathological occurrence presenting some features of interest, and only a few cases have been recorded. The condition has rarely, if ever, been diagnosed before death; slight hæmorrhage or congestion of the suprarenals is sometimes found in the course of autopsies in the event of death from other well-defined diseases. Children are more often affected than adults, and Arnaud has recorded a small number of cases occurring in new-born infants.

One or both of the suprarenal glands may be involved, and in acute cases the signs are those of insufficiency of the specific internal secretion. In a case reported from America the *Streptococcus hæmolyticus* was isolated from the blood both ante mortem and post mortem, and it was supposed that this organism was the exciting cause. Kempf describes in detail two rapidly fatal cases of suprarenal hæmorrhage in young children, accompanied by a diffuse purpuric cutaneous eruption, pyrexia, and signs of acute infection. The following case came under my own notice.

A single woman, aged 59, a patient in the Devon Mental Hospital, was suffering from chronic melancholia. General condition had been poor during her three years' residence; routine medical examinations had indicated some degree of arterio-sclerosis and slight albuminuria; she had never shown symptoms of definite illness. Weight at different periods varied between 7 st. 10 lb. and 9 st. 2 lb. No signs of Addison's disease or other tuberculous foci; she possessed none of the external sexual abnormalities associated by some observers with disease of the suprarenal glands.

Rapidly Fatal Attack.—Patient appeared well during early part of day of attack; but rather suddenly collapsed in the late afternoon; she seemed profoundly asthenic; temperature was 102·2° F.; she was put to bed. Face and extremities cold and somewhat cyanosed; radial pulse

126 per minute, irregular, "thready," and almost imperceptible. Very marked flatulent distension of abdomen, and general loss of muscular tone; no vomiting, no apparent pain or localised tenderness. Heart sounds feeble; blood pressure greatly diminished. Her condition grew worse and death took place within three hours.

Post-mortem Examination.—The body showed no cutaneous rash or bronzing, or pigmentation of mucous membranes. On opening the abdominal cavity the colon was found to be very distended, but otherwise normal; the heart, lungs, brain, liver, and pelvic organs exhibited no macroscopic lesions. As far as was ascertained, the sympathetic ganglia and the other endocrine organs were normal, with the exception of the spleen, which was pultaceous and pale. Kidneys showed slight interstitial changes; some hæmorrhagic staining of retro-peritoneal tissue in region of pancreas, but this organ was normal on section.

Suprarenal bodies both distended, oval, dark-red in colour, the size of a small hen's egg. Right suprarenal weighed 37 g., and the left slightly less. They were free from adhesions, separated readily from the kidneys, and showed no signs of tuberculous disease or neoplasm. There was no pus or necrotic tissue present, nor evidence of old inflammation. On section the cortex was seen to be thinned and the gland distended with unorganised blood-clot; the medullary chromaffin cells appeared to have been destroyed. The hæmorrhage evidently commenced in the medullary tissue and may well have coincided with the initial syncopal attack.

Microscopic examination of both suprarenal glands showed recent hæmorrhage in medulla causing complete disorganisation of the cells, and the thin cortical layer was infiltrated with blood. Sections were stained for micro-organisms without result and Gram's staining showed no evidence of bacteria.

This case is remarkable in its abrupt onset, the rapidity with which death took place, and the difficulties presented in the way of diagnosis.

I am indebted to Dr. R. Eager, medical superintendent of the Devon Mental Hospital for permission to publish the case.

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Brighton.

A SUDANESE ALBINO.

BY H. E. S. STIVEN, M.D. CAMB.,
PRINCIPAL MEDICAL OFFICER, GOVERNMENT HOSPITAL, PORT SAID.

THE accompanying photograph shows an albino, aged 25, admitted to the Egyptian Government Hospital at Port Said for a sequestrum of his right tibia. The man standing by him is his cousin. He states that his father and mother are typical black Sudanese, and come from Karma village, Markaz Argo, Dongola Province, Sudan. There are no relatives of his mother of abnormal colouring as far as he knows. His father by another wife had normal black children. He had one sister, who died at the age of 18, and one brother who died at the age of 12 white like himself. His eyes are hazel brown, hair on head and body fair flaxen colour, and his skin perfectly white all over the body but of a curious thick texture.

Sudanese albino and his black cousin.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

THE MOVEMENTS OF THE GASTRO-INTESTINAL MUCOSA.

AT a meeting of this section held on March 16th, with Dr. ROBERT KNOX, the President, in the chair, Prof. GÖSTA FORSSELL (Stockholm) read a paper on this subject. The folds of the mucous membrane of the stomach were, he said, generally supposed to be caused by passive folding of the mucosa as a consequence of the contraction of the muscular coat. The origin of the folds of the mucous membrane of the intestine was explained in the same manner, except that here the folds were supposed to be permanent anatomical structures (the Dauer-falten of German authors). The speaker held that this general view was incorrect and that the folds of the gastro-intestinal mucosa were formed by active movements of the mucous membrane itself. By means of several series of radiograms of the stomach, of the duodenum, and of different parts of the small and large intestine after an opaque meal or enema, he demonstrated that the same part of the stomach or intestine, although retaining the same external diameter, was able to vary the number, position, and pattern of its folds. By direct observations and serial photographs of the exposed mucosa of the ileum and colon in patients suffering from intestinal fistulæ (which were shown at the meeting) great fluctuations of the relief of the mucosa independent of contraction of the muscular coat were demonstrated. Anatomical

DESCRIPTIONS OF ILLUSTRATIONS.

(*See opposite page.*)

FIG. 1.—Two radiograms of a normal stomach, taken at an interval of one minute in an unchanged prone position. Compare the contours of the greater curvature in its upper half, where the mucous membrane shows deep folds; it will be observed how the folds of the mucous membrane have changed their number as well as their position and form, without any change in the width of the stomach.

FIG. 2.—A series of transverse sections (I., *a*, *b*, *c*, *d*, *e*) of the lumen of the stomach, drawn from anatomical preparations, and showing how the lumen of the stomach with the same width of the muscular coat can vary considerably through different folding of the mucous membrane, with regard to the form as well as to the width of the inner surface of the stomach. Through such forms of contraction of the mucous membrane which are shown here—and many other combinations are further possible—the lumen of the stomach can either be formed into a channel with smooth sides or divided into different canals or systems of fissures between the lamellæ. These can be placed in different ways (II., *a*, *b*, *c*, *d*), so that a filtering or sorting of the contents can take place, or small parts of the contents may be completely enclosed by mucous membrane in small digestion chambers.

FIG. 3.—Two pictures of a high jejunal loop (*ab*), taken at an interval of one minute. Observe specially the area marked *a*. In the first picture there are in this area a few wide, simple and deep folds; in the second there are numerous close-set, small folds, dividing the lumen transversely into fine chambers.

FIG. 4.—Showing, above, a longitudinal section of an intestinal loop where a number of different forms of simple mucous contraction are schematically outlined, and immediately beneath it, cross-sections of these varying folds: (*a*) Indicates a fully free lumen, the loop forming an even tube; (*b*) a fold forming a valve to restrain the flow of the chyme; (*c*) and (*d*) folds forming bigger closed digestive chambers; (*e*) a separator-like formation, filtering the contents between the folds. The lower half of the figure shows a longitudinal section of an intestinal loop, where folds are refolded and in close contact with each other with corresponding cross-sections (taken at *e*, *f*, *g*, *h*) beneath. It is clear that by this complicated folding the intestinal contents are divided up in very fine digestive chambers surrounded by mucous membrane; the folds may fill the lumen entirely. All these forms of contraction may be found in radiograms of the living subject.

FIG. 5.—Showing three transverse sections of a strongly contracted sigmoid flexure. In the topmost section a muscular septum, originating from a transverse contraction of the muscular coat, fills the lower half of the lumen. On the other hand, the folds of the mucous membrane fill the remaining cavity in such a way that the section resembles a transverse section of the jejunum.

FIG. 6.—Radiogram of a strongly contracted sigmoid colon. The folds of the mucous membrane dominate the picture, as in the anatomical preparation shown in Fig. 6.

RADIOGRAMS ILLUSTRATING PROF. GÔSTA FORSSELL'S PAPER ON THE MOVEMENTS OF THE GASTRO-INTESTINAL MUCOSA.

FIG. 1.

FIG. 2.

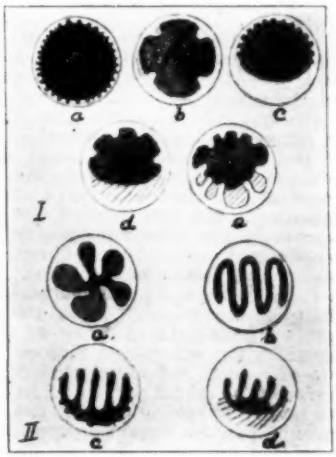

FIG. 3.

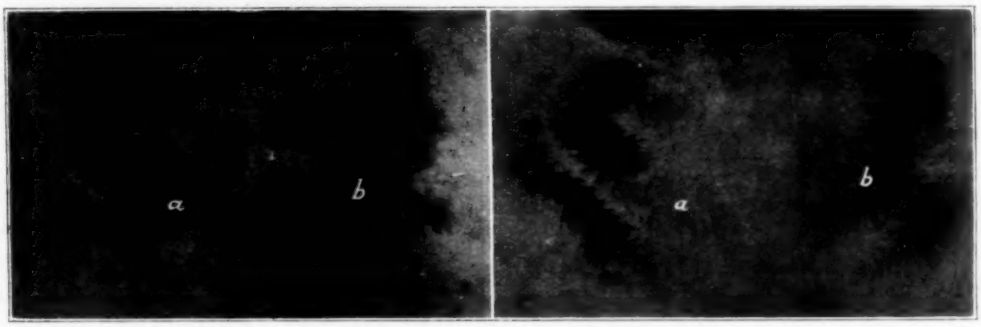

FIG. 4.

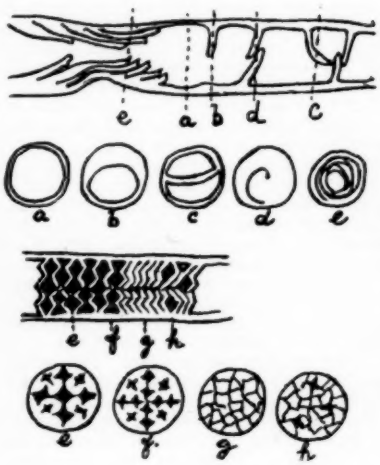

FIG. 5.

FIG. 6.

Legends to the Illustrations are given on the opposite page.

preparations of the human digestive tract, hardened by the injection of formalin shortly after death, showed similar patterns of the folds of the mucosa to those seen in the radiograms of the living subject. Even the duodenal bulb, which was generally described as being devoid of folds, showed a highly varying relief of the mucosa in both radiograms and anatomical preparations.

Mechanism of the Movements of the Mucosa.

Prof. Forssell concluded from these observations that while the muscular coat (muscularis propria) of the intestine produced the well-known changes of width and external form of the digestive tube, it had no influence upon the localised and individual folding of the mucosa which he had demonstrated. The muscularis mucosæ formed the special contractile organ of the mucous membrane; being attached to the mucosa and the submucosa it was able to displace the mucosa in any direction by means of its transverse, longitudinal, and oblique fibres. The mass of the mucous membrane and, consequently, the volume or size of its folds, was regulated by the variation in filling of its vessels, while the pattern—i.e., the number, position, and form—of the folds was determined by the muscularis mucosæ. While the formation of a high and close relief of the mucosa would obviously be aided by simultaneous contraction of the muscular coat proper, a definite degree of contraction of the muscular coat was not necessarily associated with a definite raising of mucous folds; on the contrary, a certain degree of contraction of the muscular coat producing a certain width of the tube, might be associated with a state of the mucosa varying from a total absence of folds to folding in high relief and complicated pattern.

Rôle of the Movements of the Mucosa in Digestion.

According to the present general opinion that the folds of the mucosa were anatomical and stationary, the function ascribed to them was the purely passive one of enlarging the absorbing surface of the gut and of preventing a too rapid flow of the intestinal contents. The speaker held that while movements of the muscular coat determined the rough division and large displacements of the contents of the intestinal canal, it was the movement of the mucous membrane which carried on the extremely differentiated distribution of the food in digestive chambers of varying form and size, and controlled the fine regulation of the rate of flow along the alimentary canal. The knowledge that the folds of mucous membrane were not passive structures, but represented phases of active movement, must involve a new appreciation of their function. The fact that the whole rigid world of folds and furrows thus became alive and governed by independent motor forces might prove to be of great importance in our conception of digestion from both the mechanical and chemical standpoints. The rôle that disturbance of the motor mechanism of the mucosa might be playing in the pathology of the alimentary tract was as yet very imperfectly understood, and many difficulties might occur in working out this problem. The pathological folding of the mucous membrane was not a subject for Prof. Forssell's comments beyond saying that the importance of realising the mucous relief of the intestine was illustrated by the fact that the deformities of the duodenal bulb such as the so-called "defect" and the "retraction" of the bulb, which were supposed to be due to local spasm of the muscular coat were, in his opinion, mainly produced by deep and voluminous folding of the mucous coat.

Discussion.

Sir HUMPHRY ROLLESTON referred to the beauty of the skiagrams and said he had previously regarded the gastro-intestinal mucosa as being much like the skin and capable only of about the same range of movement as the skin possessed in the act of "goose-flesh."

Dr. A. E. BARCLAY had seen the various foldings of the gastro-intestinal mucosa on many occasions without realising their true meaning, for he was hampered by preconceived ideas and by his former teaching in physiology. It must have been the experience of many that if milk or other translucent fluid were injected into the colon in an attempt to increase the bulk of an opaque enema and make it proceed further along the colon, the attempt frequently failed in its purpose. This failure was now easily explained by the valve-like action of the folds which prevented milk from mixing with the enema.

Dr. J. H. D. WEBSTER referred to recent attempts by radiologists to demonstrate duodenal ulcer by direct filling of the crater, and inquired whether, in view of the occurrence of folds in the bulb of the duodenum, it was possible to differentiate between ulcers and natural folds.

Dr. R. W. A. SALMOND inquired whether the variation in the foldings in the stomach might not be due to the varying distension of the organ by its contents filling out the rugæ.

Reply.

Prof. FORSSELL replied individually to questioners. To Dr. Webster he replied that there was a certain radiographic picture generally believed to be diagnostic of duodenal ulcer, showing a deep notch generally held to be the cavity of the ulcer in the duodenal bulb. His own view was that while the deepest part of the notch might well represent the cavity of a small and shallow ulcer, the apparent depth of the ulcer was much exaggerated by a circular rampart-like fold surrounding the ulcer with accessory folds radiating from it. This might account for the success of medical treatment in cases of supposedly large excavated ulcer of the duodenum, as demonstrated by radiography. To Dr. Salmond he replied that while it was impossible to get any folds if the stomach were much distended, any less degree of distension had no influence either on the number or pattern of the folds.

A vote of thanks to Prof. Forssell, proposed by Mr. THURSTAN HOLLAND and seconded by Dr. BARCLAY, was carried with acclamation.

SECTION OF OTOLOGY.

A MEETING was held on March 16th, Sir CHARLES BALLANCE, Vice-President, being in the chair. A discussion was held on

ACUSTICUS TUMOURS.

Dr. F. M. R. WALSHE said that the work of Magnus and Kleijn had shown how complex were labyrinthine activities. The symptoms of a typical case of eighth nerve tumour were progressive deafness, with or without tinnitus. Neurological experience did not favour "irritation" as an explanation of tinnitus, which might last for years. Tinnitus was not a constant symptom of these cases, and even when it occurred it might be long delayed. And it was not always easy to establish deafness as an initial symptom: the patient might not be aware of the fact. With regard to the vestibular division of the nerve, he thought vertigo was the only symptom which could be definitely attributed to this branch. Magnus and Kleijn's work rendered possible an accurate differentiation between cerebellar and labyrinthine defect symptoms. Ataxy in movement, nystagmus, and muscular atonia or hypertonia were found to be cerebellar, not labyrinthine, in origin. Dr. Walshe had not yet met with a case of eighth nerve tumour which had been recognised at the early or "otological stage" of the disease. The next group of symptoms to appear were usually those due to progressive paralysis of function in cranial nerves adjacent to the eighth nerves, and in the cerebellum. The first of these to show signs was, usually, the fifth. Of the irritative symptoms, the chief were not pain so much as numbness, creeping sensations in the skin, &c. The motor division of the fifth nerve was less commonly affected, but in some there was diminution or absence of the corneal reflex. Involvement of the facial nerve was, when present, next in importance.

Facial paresis was rarely, however, profound. Paralysis of the external rectus was relatively common, but it could be regarded as a false localising sign. Sixth nerve palsy was not the result of direct involvement of the nerve by the tumour, but was a general pressure effect, which Cushing attributed to the strangulation of the nerve between the floor of the skull and the anterior inferior cerebellar artery. Symptoms related to the ninth, tenth, and eleventh nerves must be viewed as terminal symptoms rather than as aids to diagnosis; they showed themselves as dysphagia and dysarthria. Symptoms dependent on compression of the anterior part of the lateral lobe of the cerebellum varied in date of onset and intensity in different cases, but were a constant part of the clinical picture of the disease. They were muscular hypotonia on the same side, inability to perform rapidly alternating movements, and a tendency to overshoot the mark aimed at. In the lower limbs this was manifested in a staggering gait and a tendency to lose balance. Affecting the muscles of the head and neck, it caused such symptoms as nystagmus and defective articulation.

In eighth nerve tumours, general pressure symptoms were the result of compression and distortion of the brain stem, which blocked the exit of cerebrospinal fluid from the ventricular system and led to secondary internal hydrocephalus. The results were headache, vomiting, and progressive visual impairment due to choking of the disc. Also the patient's intelligence might be impaired. Generally, pressure symptoms dominated the picture from the onset, and focal symptoms might not fully appear. Dr. Walshe related the history of the case from which the tumour (shown by Mr. F. J. Cleminson) was obtained, to show how much the details could vary from the cut-and-dried symptom-complex usually laid down. This young woman was admitted because of a uterine lesion, with no complaint of anything referable to the nervous system, though she had considerable headache, her visual acuity was reduced, and she was occasionally sick; also she was stupid. There was chronic otitis media, with free ear discharge, and bilateral papillœdema. Among other events she developed a constant paresis of the right lower face. No relief followed a left supra-tentorial decompression, and she died comatose. It was a typical eighth nerve tumour. There was some dilatation of the ventricles and secondary hydrocephalus. In conclusion Dr. Walshe discussed the physiology of the eighth nerve.

The Surgical Treatment of Tumours of the Eighth Nerve.

Mr. WILFRED TROTTER spoke of the necessity for forming a clear conception of the operative problem. The disease consisted of a benign, slow-growing tumour, nearly always single, and it owed its seriousness entirely to its situation, which rendered it one of the most difficult conditions in the whole range of surgery. As its successful removal meant a sudden cure, with very little disability, minute attention to the technique of removal was fully justified. The same applied to the precise anatomy of the part and of the route of entry to the anterior portion of the posterior fossa, in the angle between the pons and the cerebellum. With regard to their behaviour to disease, the cranial nerves were divisible into two groups: the anterior group, made up of the trigeminal nerve, and the auditory and facial; and the posterior group, but these did not come into consideration in an early case. It was also necessary to remember the relation of the tumour to the medulla. The pressure on the brain stem bore more on the pons than on the medulla, so that in the early case interference with the cardiac and respiratory centres was not so likely as later. The advance of the surgeon to the site of the tumour must be through the suboccipital part of the skull. One of the most important pathological features entering into such a case was the pressure exerted on the brain; the occlusion of the central canal of the nervous system caused secondary hydrocephalus, which, by its pressure, was a real danger in the operation. He explained in detail why a decompression operation in these cases was useless. The general rise of pressure in the posterior fossa in the late stages was accompanied by displacement of the cerebellum through the foramen magnum in the form of a cone, which closed that foramen and prevented the escape of cerebro-spinal fluid, so that the pressure was still further increased. Mr. Trotter concluded by giving a detailed account of the steps of the operation and the dangers to be guarded against. He advocated removing the tumour capsule, to prevent a recurrence, and favoured finishing the operation at one stage, two points upon which experts held diverse opinions.

The PRESIDENT referred to some cases of the condition which had come under his care, and to the great help now afforded in the diagnosis of them by X rays. He mentioned the fact that he assisted at some of the first operations in London on encapsuled tumours of the posterior fossa, and that surgery had now become a much more gentle art than it was many years ago. He agreed as to the absurdity of doing a decompression operation for a tumour which was causing internal hydrocephalus. He favoured the two-stage operation for the removal of these tumours.

Dr. GORDON HOLMES agreed with the clinical picture which had been put forward by the openers. He had had a long experience of this kind of case. The first symptoms were weakness of palate, disturbance of function of the vocal cords, dysarthria, and swelling. Sometimes the glosso-pharyngeal and vagus complex suffered most, apart from the auditory nerve. After the eighth, the nerve most frequently involved was the seventh. Hemiplegic and sensory symptoms on the opposite side of the body were very infrequent. In a certain number of the cases there was very little disturbance of tone. He had seen only one case recover after gross removal of the tumour, a case operated upon by the late Sir Victor Horsley many years ago. Of 13 operated cases which the speaker had had in the last year or two, nine were alive and well some time after the operation—most of them six months after, some three or four years after. He did not think complete nerve deafness was present in all the cases that had reached a stage at which a diagnosis could be assured.

Mr. SYDNEY SCOTT spoke from an experience of 45 cases of auditory nerve tumour. Such a growth often invaded the cochlea, and if an attempt were made to remove the tumour in all cases, it would be necessary to take away the labyrinth to make sure that the disease had been eradicated. He had never felt justified in diagnosing auditory nerve tumour until there was almost absolute deafness, a very difficult condition to be sure of, because sounds which had to be used were generally heard by the good ear.

Sir J. DUNDAS-GRANT spoke of the work of Jones on equilibrium and vertigo as an indication of the existence of optic nerve tumours. Jones stated that on the same side as the tumour all the caloric tests were negative, for the vertical as well as for the horizontal canals.

A number of cases of otological interest were exhibited; and Mr. CLEMINSON showed the eighth nerve tumour referred to by Dr. Walshe.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

A MEETING of this Society was held on March 16th at 1, Upper Montague-street, London, W.C., when the chair was taken by Dr. T. EUSTACE HILL, the President, and Dr. R. J. EWART read a paper on the

Economic Circumstances of the Country as a Whole, and the Various Rates by Means of which Health is Measured.

He first dealt with the profound effect which the course of epidemic diseases has had on the civilisation of the world, and in particular suggested that the industrial revolution of the nineteenth century was dependent

upon the control of small-pox. In this connexion he referred to the view that malaria had been fatal to the civilisation of ancient Greece and plague to that of Rome; and he suggested that the introduction of syphilis in the year 1500, by destroying the economic surplus in the Northern States of Italy, was responsible for the termination of the "Renaissance." Various statistics indicative of the progressive economic changes in the nineteenth century were considered, and stress was laid particularly on foreign trade as an index. This was shown to be capable of division into, firstly, a fluctuation measured by percentage unemployment figures in certain trade-unions, and secondly, a regular upward trend measured either by the consumption per head of food and other necessaries, or by the value of real wages. The speaker proceeded to discuss the influence of the economic variations indicated by these curves upon various death-rates, as follows:—

Scarlet Fever.—The change in the epidemiology of this disease, which occurred about 1830, was attributed to the migration of families from town to town, due to industrial necessity and made possible by the construction of railways and other means of transport. This migration resulted in closer admixture of infectious and susceptible persons in the country as a whole, and it was suggested that the high degree of immunity now existing was due to this cause.

Infant Mortality.—Dr. Ewart attributed the high death-rate amongst infants in the later years of the nineteenth century to the deterioration of the milk-supply in bacterial content, due to the increase in the distance over which the milk was transported; and he considered that the fall in infant mortality after 1899 was caused by the replacement of this contaminated fluid by comparatively sterile milk products.

General Death-rate.—The speaker pointed out that this was not affected by fluctuations in prosperity, but was closely associated with the value of real wages. He considered that this was an indication that the Poor-law had been successfully administered so as to maintain the health of the community during periods of trade depression without interfering with its normal economic life. The liberal relief now granted in the way of food-supply he regarded as the main factor responsible for the present favourable state of the public health; but he feared that the methods adopted were interfering with the normal economic life of the community, and that real wages might thereby be reduced, which he predicted would cause an increase in the general death-rate and in that from phthisis.

The PRESIDENT, Dr. F. E. FREMANTLE, and Dr. G. F. BUCHAN discussed the paper, and in his reply Dr. EWART urged the importance of the consideration of such factors as those dealt with in his paper, which were not commonly considered in the reports of medical officers of health.

HARVEIAN SOCIETY.

THE TREATMENT OF DUODENAL ULCER.

AT a meeting of this Society on March 22nd, with Sir CRISP ENGLISH, the President, in the chair, Sir BERKELEY MOYNIHAN introduced a discussion on this subject. The paper is given in full on the opening page of this issue of THE LANCET.

Dr. A. F. HURST, who followed the opener, said that his interest in the subject of duodenal ulcer was awakened by a visit to Sir Berkeley Moynihan's clinic in 1907. In the following year the records showed that duodenal ulcer was beginning to be recognised and diagnosed as a separate entity at Guy's Hospital. The question under discussion was the treatment of duodenal ulcer and particularly whether such an ulcer could be cured by medical treatment, and, if so, whether medical treatment was to be preferred to surgical. Dr. Hurst maintained that duodenal ulcer could be cured by medical treatment alone. He quoted a case sent to him by Sir Berkeley Moynihan in 1909 with an unmistakable duodenal ulcer with hæmorrhage, the patient having refused operation although it was strongly urged. The man was put on treatment (of which particulars were given in circulars distributed at the meeting) and was cured and had remained well with absolute freedom from pain for 14 years. When such a result could be obtained by purely medical treatment where was the necessity for operation for this condition? The effect of gastro-enterostomy was to divert the irritating gastric contents from the duodenum (for radioscopy proved that nearly all of the meal passed through the new stoma in the majority of cases) thus allowing the ulcer to heal. But operation did not cure the inherent diathesis which predisposed to duodenal ulcer; it could not cure the hypertonicity of the stomach, nor the hyperchlorhydria. The persistence of hyperchlorhydria after gastro-enterostomy was, in fact, the cause of jejunal ulcer after that operation, which, in Dr. Hurst's experience, occurred in no less than 5 to 10 per cent. of cases. Such ulcers were much more difficult to cure by medical means than the original duodenal ulcer, and the condition of some of these patients, often after multiple operations, was deplorable. A further unpleasant sequel of gastro-enterostomy, in a small number of cases, was diarrhœa. It was said that operation was imperative for hæmorrhage or perforation, threatened or actual. Death from hæmorrhage was, in his experience, very rare; there was only one such death from duodenal ulcer at Guy's Hospital during the last eight years, and that occurred two days after the operation of gastro-enterostomy. Of the 19 cases of death from perforation only four had symptoms of duodenal ulcer sufficiently definite to warrant a diagnosis before perforation occurred. Dr. Hurst believed that medical treatment would have attained more general success if the septic foci which had such an important ætiological bearing on the disease were more efficiently treated, and he was inclined to ascribe much of the success of Sir Berkeley Moynihan's surgical treatment to the preliminary extirpation of these foci. The scheme of medical treatment he employed, a modification of Sippy's, was not too drastic when the serious nature of the disease was considered. After attending to the septic foci, this treatment must be continued for 14 days after pain, tenderness, rigidity, occult blood in the stools, and deformity of the duodenum as seen by X rays had all disappeared; it was essential that no exceptions be made to this rule, although the patient might feel quite well two or three days after treatment commenced. The after-treatment was directed against the diathesis; when recurrence occurred after this treatment it was, in 19 cases out of 20, the fault of the patient who committed some indiscretion in diet. Pyloric obstruction and hæmorrhage in a very few cases were the only indications for operation, for Dr. Hurst believed that all other cases were curable by medical treatment if the diagnosis were accurate and treatment correct and adequate.

The following is the scheme of medical treatment employed by Dr. Hurst:—

ULCER DIET.

1. Milk 7 oz. every other hour from 8 A.M. to 8 P.M. inclusive. This can sometimes be replaced twice in the day by the same quantity of junket and once by custard. To each milk feed add Mixture 1.
2. Arrowroot, cream of wheat or Benger, 6 oz., with cream, 1 oz., every other hour from 9 A.M. to 9 P.M. inclusive. Two feeds to have red-currant jelly added, and one to be replaced by potatoes or artichoke purée. N.B.—All the above (1 and 2) can be cold or warm, according to taste.
3. Immediately before milk feeds, ½ oz. of olive oil.
4. Immediately before the arrowroot, cream of wheat and Benger feeds, 1 drachm of Mixture 2.
5. Powder 2, to be washed down in 5 oz. of water at 7 A.M., and patient to lie on his right side for 1 hour.
6. Powder 1, half an hour after every feed from 8.30 A.M. to 9.30 P.M. and also at 10 P.M.
7. 10 P.M. Inject subcutaneously from 1/50 to 1/100 gr. of atropine, or given dr. 2 of Mixture 2.
8. An enema on alternate mornings if the bowels are not naturally opened.

9. Wash the mouth out after each feed, and thoroughly clean the tongue by scraping with a spatula morning and evening.

Note.—During the night the patient should have a feed and Powder 1 by his bedside, so that whenever he wakes, whether in pain or not, he can take a feed followed immediately by a powder. This can be repeated as often as he is awake throughout the night.

Powder 1.—Prepared chalk, gr. x.
Bismuth oxycarb., gr. xxx.
Powder 2.—Bismuth oxycarb., oz. ½.
Mixture 1.—Sod. citratis, gr. xv.
Emuls. magnesiæ, ad i.–iv. drachms, the dose to vary according to the state of the bowels.
Mixture 2.—Tinct. bellad., ℥v.–x.
Aq. ad dr. i.

A hæmorrhage should be treated by emptying the stomach with a Senoran's evacuator and washing and with ice-cold water till it returns colourless. Then give powder 1 every 3 hours, but no food for 24 to 48 hours.

INSTRUCTIONS HOW TO PREVENT THE RECURRENCE OF SYMPTOMS.

Avoid alcohol, except if desired later on, a small quantity of light wine or diluted whisky at meals; avoid effervescing drinks.

Avoid all pips and skins of fruit (whether raw, cooked or in jam, and currants, raisins, and lemon peel in cake), nuts and all unripe fruit. For example, an orange may be sucked but not eaten. Currants, raisins, and figs are particularly undesirable.

Avoid all raw vegetables, whether taken alone (celery, watercress) or in pickles or salad; green vegetables must be passed through a sieve and mixed with butter in the form of a purée. Porridge is only allowed if made with the finest oatmeal.

Avoid vinegar, lemon juice, sour fruit; pepper, mustard, curry, chutney, excess of salt; new bread; tough meat, salted fish or meat, pork, made-up dishes, high game; clear or thick meat soup.

Take plenty of butter and cream, and a tablespoonful of olive oil before each meal.

Eat slowly and chew very thoroughly.

Don't smoke excessively. No smoking at all if any indigestion present.

Have some food in the middle of the morning, and on going to bed, and if you wake during the night.

Have your teeth attended to by your dentist regularly every six months.

Take no drugs in tablet form.

If you have the slightest return of symptoms, go to bed for a few days on a milk diet, and do not wait for the symptoms to get serious.

Dr. ROBERT HUTCHISON said that while the opener of the discussion (Sir Berkeley Moynihan) had on a previous occasion described himself as a "physician condemned to practise surgery," he (Dr. Hutchison) would describe himself as a "surgeon condemned to practise medicine," since he preferred the direct attack. He admitted that duodenal ulcer could be cured by medical treatment, but he thought Dr. Hurst's treatment was too elaborate. For himself he would prefer to have his abdomen opened twice rather than undergo Sippy's treatment once. Dr. Hurst's view was that the patient must regulate his life to suit his diathesis; Dr. Hutchison thought this was "not good enough" for a man in the prime of life. After gastro-enterostomy it was his experience that the gastric acidity did fall, so that there was no necessity for strict dieting and giving up smoking, nor did an occasional indiscretion in diet cause a return of the symptoms. Dr. Hurst asked his patients to "throw away the very reasons for living in order to remain alive." For his part, Dr. Hutchison considered such medical treatment not worth while, when by gastro-enterostomy the surgeon could cure his patient and guarantee him against the risks of hæmorrhage and perforation. Hæmorrhage, in his experience, was by no means infrequently fatal. Post-operative jejunal ulcer was, in his experience, very rare.

Mr. JAMES SHERREN was in general agreement with the opener. He maintained that where the diagnosis of duodenal ulcer was made from repeated attacks and clinched by the test-meal and X ray findings the treatment should be surgical, for perforation and hæmorrhage might, and did, in fact, occur after medical treatment. After operation the ulcer was invariably healed in every case where he had the opportunity of examining the duodenum either at a further operation or post mortem. As regards the type of operation, he had given up the direct treatment of the ulcer ten years ago. Recently he had been giving gastro-duodenostomy a trial in suitable cases. As regards the question of the persistence or otherwise of hyperchlorhydria after operation, he quoted the results of test-meals after operation in 239 cases. In 208 cases the free HCl was almost abolished and there had been no recurrence of symptoms; in 14 cases the acidity remained high, and further symptoms occurred, and in five of the latter further operation was required for jejunal ulcer. He agreed as to the necessity for eradicating septic foci, and pointed out that a possible source of sepsis, the appendix, could only be removed by an abdominal operation. Surgical treatment of duodenal ulcer was the only treatment worth while, and gastro-jejunostomy, he considered, was one of the most brilliant operations in surgery.

Dr. MORELAND MCCREA said that as a general practitioner his experience of duodenal ulcer had not been large, yet he had seen several deaths from hæmorrhage in this condition. He had also seen cases in which operation had failed to give relief owing to a septic focus in an antrum having escaped detection. Drainage of the antrum had, in these cases, been curative. In order to improve results the septic foci must be found and dealt with. Before any abdominal operation, he thought it essential that the patient should be overhauled by a physician, and, if it were found that the blood pressure were below normal for the individual, operation should be deferred, as there was a danger of infarction. As regards the anæsthetic, he confessed to a dislike of ether owing to the frequency with which it was followed by patches of pneumonia. The treatment after operation should be left in the hands of the physician. If asked to give his vote, he would record it in favour of surgical treatment.

Mr. GEORGE WAUGH pointed out the uncertainty of diagnosis of duodenal ulcer other than by operation as a possible cause of divergence of opinion on the relative merits of medical and surgical treatment. Duodenal ulcer must be a rare disease when the distinguished opener had attracted to his clinic but 500 odd cases in ten years; yet the cases diagnosed as duodenal ulcer were legion. In his own practice he found this a difficult lesion to diagnose; not 1 in 20 cases exhibiting the symptom-complex was found at operation to have an ulcer. What the patient sought was relief from pain, and no evidence had been produced that the ulcer was indeed the cause of pain; while the gut was well known to be insensitive to any form of injury (cutting, crushing, burning, &c.), other than traction on its mesentery, it seemed to be wrong to attribute pain to ulceration. Mr. Waugh quoted a case where pain persisted after gastro-enterostomy and could only be relieved by lying down. At a second operation performed by himself it was found that the duodenal ulcer had healed, but the anastomosis had sloughed, leaving an ulcer with the pancreas and aorta in its base. Yet this patient had been able to eat roast beef without discomfort when lying down! He considered that the ætiological bearing of a septic focus in the production of duodenal ulcer was not proven; it should be remembered that 75 per cent. of the population between 1 and 18 years of age suffered from septic teeth or tonsils, yet duodenal ulcer was a very rare disease between those age-limits. The value of gastro-enterostomy was obvious in some conditions, such as saddle-shaped ulcer of the stomach and pyloric stenosis, or as a sequel to the closure of a perforated duodenal ulcer, but for unperforated duodenal ulcer it was less rational. In 18 of these cases he had dealt only with embryonic mesenteries, with immediate results which were dramatic. Three cases relapsed and began to have symptomless vomiting some months after the first operation. On re-operating he found that the duodenum which had previously been large and distended had shrunk owing to the contraction of fibrous tissue in the healing process. In these cases gastro-enterostomy to relieve the obstruction gave lasting relief.

Sir WILLIAM WILLCOX said that our knowledge of duodenal ulcer was largely due to the pioneer work of the opener. He believed that the cause of duodenal ulcer was always sepsis, although such sepsis was not always clinically demonstrable. He urged that where no other focus could be found the teeth should be X rayed; even though they appeared quite sound, apical sepsis would thus often be demonstrated.

Where there was a recurrence of symptoms after a thorough and early trial of medical treatment he advised operation. Hæmorrhage was another indication for operation. He had seen cases die of hæmorrhage, when untreated surgically, and others recover after blood transfusions and operations, although apparently hopeless. On the other hand, he had known patients recover completely, in one case for as long as 17 years, without anything more than simple medicinal treatment, even though they had had severe hæmorrhage.

Mr. IVOR BACK thought it was curious that the anastomosis of an acid-secreting viscus with an alkaline-secreting viscus should produce results which were described as a "glory to surgery." He asked whether we were not dealing with an end-product of disease, and whether by attacking the prime cause it might not in the future be possible to dispense with such operations.

Dr. HURST, in reply, said that although the exciting cause of duodenal ulcer was invariably sepsis, the subjects of duodenal ulcer had nearly always the duodenal ulcer diathesis, often familial, which manifested itself in the hypersthenic stomach and hyperchlorhydria. For this reason constant care was required, although the very strict régime he recommended might be relaxed somewhat after two years. He explained the fact that no death had occurred in his own practice from hæmorrhage from duodenal ulcer by the treatment he employed. It was essential to stop the gastric secretion set up by the presence of blood in the stomach; this he did by washing out the stomach with ice-cold water, leaving sometimes one drachm of adrenalin in the emptied stomach. He allowed no food, but gave alkaline powders every three hours. He was always prepared to do a blood transfusion, but this was only rarely necessary.

Sir BERKELEY MOYNIHAN, in reply, said that duodenal ulcer was not so rare as might be imagined from his figures. He had had more cases in the preceding ten years than in the ten years under review, for there were now a number of other surgeons at Leeds, some of whom had been trained by himself, who operated on a large number of these cases. As regards the relative merits of medical and surgical treatment, he pointed out that the majority, if not all, of the cases in which death occurred from perforation had had one or more courses of medical treatment. As regards diagnosis, he thought that if sufficient care were taken mistakes would only rarely be made. In his last 200 operations the diagnosis had only proved to be wrong on five occasions. In fact, he knew of no disease in which the diagnosis could be made with more certainty. He felt that Mr. Waugh was confusing the picture. Some mobility of the colon was normal, and he knew of cases where colectomy had been performed for duodenal ulcer, and death occurred shortly after from perforation. As regards the ætiology, he could not be certain as to the exciting cause, although he believed that this was invariably sepsis in the mouth, the accessory sinuses, or the abdomen. If sufficient care were taken with each patient it was possible to keep the mortality of surgical treatment to zero, whereas medical treatment had always its mortality from hæmorrhage and perforation. Even where jejunal ulcer occurred the cases could still be cured by gastrectomy, which he had performed as a secondary operation on many occasions, with only one death.

PRESENTATION TO DR. W. W. D. THOMSON.—At a reception given in the Medical Institute, Belfast, on March 22nd by Prof. R. J. Johnstone, F.R.C.S., and Mrs. Johnstone, opportunity was taken to make a presentation to Dr. Thomson and to congratulate him on his recovery from a long and trying illness. The presentation was made by Prof. Johnstone, President of the Ulster Medical Society, who referred to Dr. Thomson's good record as a student, and his services as secretary of the Society. The presentation took the form of a cheque, a silver tray bearing the names of the subscribers to the presentation, and a ring for Mrs. Thomson. Dr. Thomson referred feelingly to the sympathy shown to him by medical friends during his illness.

Reviews and Notices of Books.

ELECTRO-THERAPY.

Electric Ionisation. Second edition. By A. R. FRIEL, M.D., F.R.C.S.I., Aural Specialist, Lissonia and Almeric Paget Ionisation Clinics for Otorrhœa; Aural Specialist, Ministry of Pensions Boards, London District. Bristol: John Wright and Sons, Ltd. 1922. Pp. 132. 8s.

THE second edition of this book contains two short additional chapters: one by Dr. Bouchet, of Paris, on the treatment of endometritis by ionisation; and the other by Mr. Ernest Sturridge, on the treatment of pyorrhœa by the same method. The first three chapters of the book deal, as before, with physical principles, apparatus for treatment, and the properties of various ions, while the remaining seven chapters are devoted to the practice of the method of ionisation for the treatment of disorders of various parts of the body. Some account is given of all the ions which are in general use, and of the diseases which can be treated by them, but the author pays chief attention to the zinc ion and its application in cases of infection of wounds, sinuses, the accessory sinuses of the nose, and the middle ear. A complete chapter is devoted to the subject of the disinfection of the middle ear by zinc ions in selected cases of chronic suppurative otitis media. The author states the type of case which should be selected for treatment by this method, gives full details of the methods which he has adopted, and tabulates the results of a lengthy experience. He gives the results of other workers, and a note is contributed by Dr. T. B. Jobson on his experience of ionisation in chronic otorrhœa. The author advises that when treatment by zinc ions is given, dosage should be more accurately measured, and he proposes a new unit for which he suggests the name "leduc" in honour of the distinguished professor at Nantes. This unit takes into account not only the strength and duration of the current, but also the area of the part subjected to the treatment. The adoption of this unit would render dosage more exact in treatment by zinc ionisation. If we may judge from the results of the author and other workers, the value of zinc ionisation for chronic suppurative otitis media would seem to be established.

This book is a useful and practical guide to the subject of ionisation.

An Introduction to Electro-Therapy. By CATHARINE JAMESON, Member of the Chartered Society of Massage and Medical Gymnastics; Qualified Teacher of Medical Electricity for the Society's Examinations. London: H. K. Lewis and Co., Ltd. 1923. Pp. 196. 6s.

THIS book is intended primarily for those who are studying for the examination in medical electricity held by the Chartered Society of Massage and Medical Gymnastics. The subjects for the examination are elementary faradism and galvanism, and the author devotes the greater part of the book to the physics, electro-technics, and medical uses of the faradic and galvanic currents. Other branches of medical electricity—viz., high-frequency, diathermy, static electricity, and the testing of the electrical reactions—are considered too briefly even for the purposes of an introduction, and the wisdom of their inclusion in such a manual is doubtful. The descriptions of the construction and working of faradic and galvanic apparatus, and the instructions regarding the application of the currents and the comfort of the patient during treatment, will be useful to the masseuse during her preparation for the examination, but in the elementary scientific principles which must be studied before the subject of electro-therapy can be intelligently grasped the book is frequently at fault; for example, statements are made that the ether conducts waves of sound, that water can be evaporated into

its component gases, that a static machine, when running, becomes highly magnetic. The description on p. 54 of the changes which occur in the electrodes is inaccurate in detail, atoms being confused with ions, and there are numerous other errors. The comparison of the movements of ions, and their separation, to the dancing partners in a ball-room is attributed by the author to Leduc, but the analogy was first made by Lewis Jones, and Leduc uses it in his work "Electric Ions and their Use in Medicine," with due acknowledgment to its originator.

THE VASO-MOTOR SYSTEM.

By Sir WILLIAM M. BAYLISS, M.A., D.Sc., LL.D., F.R.S., Professor of General Physiology in University College, London. London: Longmans, Green and Co. 1923. Pp. 163. 7*s.* 6*d.*

THIS excellent, though somewhat technical monograph will form a valuable addition to the literature on the physiology of the circulatory system. It only purports to discuss the various factors which produce changes in the calibre of the blood-vessels; when we see how numerous and complicated these factors are, and when we remember that recent study has shown that contractility is not a monopoly of the arterioles, but is shared by capillaries and to some extent by the veins as well, we can understand that there is much to discuss and not a little on which to speculate, falling within the purview of this volume. Many lines of work and thought focus on to this question of vaso-motor effect, but the author has none the less been compelled at times to be refreshingly desultory. It is seldom that a work of this nature, illustrated by as many as 67 well-produced figures, is offered at such a reasonable price; the last page supplies the explanation, for the monograph was printed in Saxony—and very well printed too.

TUBERCULOSIS.

A Simple Treatment for Tuberculosis. By OWEN F. PAGET, M.D. With an Introduction by J. GEORGE ADAMI, M.D., F.R.S., and Prefatory Remarks by W. P. BIRMINGHAM, B.A., M.D. London: Constable and Co., Ltd. 1923. Pp. 90. 5*s.*

IN his introduction to this book Prof. J. G. Adami speaks with cautious sympathy of the investigations carried out by the author. "I have myself experienced the danger of obsession, and . . . I have . . . a distinct sympathy for one who has had the courage of his convictions. . . ." Of the author's enthusiasm there can be no doubt. The treatment which he advocates consists of the insufflation of dry, powdered tubercle bacillary emulsion (B.E.) into the nose. He gives a fairly full account of the rationale of this treatment, and publishes charts showing how effective it may be in bringing down the temperature. These charts suggest that the temperature fall is not by definite crisis, but it does ultimately come down—"invariably," according to the author. It is natural in a book of this character for the reader to turn first to the results obtained. On p. 39 the author states:—

> "The number of cases of tuberculosis which have passed through my hands since the commencement of my investigations probably reaches 1000. The last series, on which the dosage given is founded, consisted of 500 cases of tuberculosis and suspected tuberculosis, which were under my care when serving with the Australian forces. Every patient improved under treatment, and no patient refused treatment. In my first fortnight before treatment commenced there were three deaths. In the following ten months with treatment there were two deaths, of these one, an advanced case, had old syphilitic disease of the nose, the other had at best a week to live when admitted. He lingered three months."

No one familiar with statistics in general and tuberculosis in particular will be vastly impressed by these statements, and it is a pity that the author has not submitted more carefully analysed material by which readers can judge of the merits of his treatment. It is conceivable that this method of giving tuberculin is superior to the oral, rectal, cutaneous, intracutaneous, subcutaneous, and other methods, and the recent work of Besredka, referred to in an annotation in THE LANCET of Jan. 6th (p. 34), certainly suggests that some of the problems of immunisation may be solved by his theory of "organ receptivity." Though Dr. Paget does not give the impression of having gained a profound knowledge of pulmonary tuberculosis in all its varied wickedness, he is a breezy writer with a light touch. He is no lover of milk, witness his aphorism: "There is only one time in life when man should drink milk, and that is when he is too feeble to be capable of anything else." And again: "I sometimes wonder whether more human beings have not been maimed and killed by drinking the milk of tuberculous cows in our generation than have died from alcoholic poisoning." Who dare say he is wrong?

MENTAL DEFICIENCY (AMENTIA).

Fourth edition, revised and enlarged. By A. F. TREDGOLD, M.D., M.R.C.P., F.R.S.Edin., Lecturer on Mental Deficiency at London University; Physician and Neurologist to Royal Surrey County Hospital. London: Baillière, Tindall and Cox. 1922. Pp. 564. 21*s.*

IN this fourth edition of Dr. Tredgold's well known book alterations and additions are numerous and important, and many new illustrative cases are quoted. The most notable changes are on the psychological side. With regard to amentia in general, while admitting that lower grades show chiefly a failure of attention, perception, or memory, Dr. Tredgold now takes up the position that the essential characteristic of amentia is a "defect of wisdom," meaning by this the faculty first so named by Dr. Mercier, by virtue of which a man can make plans, cope with new situations, take long views, and shape his conduct so as to deserve success in life. As tests of wisdom there are suggested Terman's ball and field test, Healy's construction tests, and the Porteus mazes, but while no one denies that these tests supply evidence of capacity to plan, success in them does not prove any great degree of wisdom. There is no test of wisdom but living, and Dr. Tredgold's criterion is surely too high. Many seriously lacking in wisdom in his sense can make a fair show in a limited environment, sufficient indeed to satisfy Dr. Tredgold's standard of normality—"the maintenance of existence without supervision or support." The section on moral imbecility has been rewritten, and Dr. Tredgold's position in regard to this much-disputed subject is noticeably altered. The distinction between moral perception and moral sense is now made clear, the latter term being reserved for the "emotion concerning right and wrong," the "sense of obligation to do the right and eschew the wrong." In his enumeration of the fundamental human instincts, however, he curiously ignores entirely the "social" or "gregarious" instinct, although in one passage he admits that in some persons altruistic tendencies may be innate and have the compelling force of instincts. For the same reason Dr. Tredgold, while predicating absence of the moral sense or emotion as the most obvious feature of the moral imbecile, maintains his contention that there is also a defect of wisdom. He holds that a moral imbecile is a mental defective whose intellectual defect is not so obvious as it is in the case of those who are usually so designated.

The chapter on clinical examination has been considerably revised and enlarged, and much greater prominence is given to modern tests. Goddard's arrangement of Binet's scale, although only 11 years old, is already somewhat out of date, and might well be replaced by a more carefully standardised revision like that of Mr. Cyril Burt. Dr. Tredgold is not concerned by evidence from tests that amentia shades into normality by gradual stages. He holds that amentia, like genius, savours of the abnormal, and there is certainly much in the behaviour of many aments (and many men of genius) to support this opinion. His experience of

the use of pluriglandular extracts in mongolism is interesting, as is also his suggestion, new, we think, to this edition, that there are two types of cretinism, one in which the thyroid lack is but a complication of primary amentia, the other in which the thyroid insufficiency is the fundamental cause of the amentia. This would account for variations in response to treatment. The chapter on causation remains, practically unaltered, as a brilliant example of expert investigation and expert judgment.

It has almost become a platitude to say that Dr. Tredgold has written the standard work in English on this subject. It should be periodically re-read by all concerned with diagnosis or care of defectives. Its lucid style gives added pleasure to the reading.

SEXUOLOGY.

Das Geschlechtsleben des Menschen. By Dr. PLACZEK. Leipzig: G. Thieme. 1922. Pp. 205. 4*s.* 2*d.*

THERE being in the English language no compendium of sexuology, but unfortunately many sciolistic and artless productions touching one or other part of the subject, and ignoring the most of it, Dr. Placzek's book might well be translated. For those who wish to become real students it would serve as primer to the important work of Mr. Havelock Ellis, which at last is procurable. By adopting the tabular form, this Berlin neurologist has got into 200 small octavo pages of good print a most serviceable and adequate outline of modern sexuology. There are also some fresh observations—e.g., that in eunuchs castrated early the beard may appear late in life, as it does in old women. Steinach's work and the general deductions therefrom are rated high, although his histological claims are on the whole rejected. Freudism is perhaps not rated quite high enough. The author thinks the evil effects of coitus interruptus exaggerated, especially as regards the male partner. The volume is compact and well thought out.

ST. MARY'S HOSPITALS, MANCHESTER.

A Short History of the St. Mary's Hospitals, Manchester, and the Honorary Medical Staff, from the Foundation in 1790 to 1922. By JOHN WEBSTER BRIDE, M.D. Manchester: Sherratt and Hughes. 1922. Pp. 132. 6*s.*

St. Mary's Hospitals, Manchester, are now known as St. Mary's Hospitals for Women and Children, Whitworth-street West, and High-street, Rusholme. Their former title was St. Mary's, Southern, and Maternity Hospitals, and they were amalgamated in 1904. The original hospital, which was not known as St. Mary's until 1854, was founded by Charles White, one of the surgeons to the Manchester Royal Infirmary, in 1790. Associated with him were three other medical men, also on the staff of the infirmary—namely, his son Thomas, and Edward and Richard Hall. The hospital was at first housed in what had been a private house in Old Bridge-street, Salford. In 1795 it was moved to another site, the Bath Inn in Stanley-street, and was then known as the Lying-in Charity. In 1840 another move was made to South Parade, St. Mary's, Manchester, but by 1853 accommodation was found insufficient and steps were taken to procure a new building. This was built in Quay-street, Manchester, and was opened in 1856. We do not clearly gather from Dr. Bride's account what was the ultimate fate of the Quay-street Hospital, but in 1904 a new hospital was opened in Oxford-street, Manchester, and the amalgamation with the Southern Hospitals was carried out. This was the gynæcological branch and a maternity branch was opened in Whitworth-street (formerly Gloucester-street). Another branch was opened in High-street in 1912. All this is set out in this short history, as well as a series of biographies of past members of the staff, including such notable names as that of Charles Clay, the father of ovariotomy in Europe. His first ovariotomy was performed on Sept. 13th, 1839. Other well-known names are those of David Lloyd Roberts, Charles Cullingworth, and William Japp Sinclair. The book concludes with an account of the work of the hospitals at the present day.

Altogether a very interesting little book, which would have been still better had the account of the various moves and sites of the original hospital and its successors been made more clear.

DIAGNOSTIC AND THERAPEUTIC ERRORS IN OPHTHALMOLOGY.

Diagnostische und therapeutische Irrthümer und deren Verhütung. Edited by Dr. J. SCHWALBE. Part IV. of the Ophthalmological Section by Dr. BIELSCHOWSKY, Director of the University Eye Clinic at Marburg. Leipzig: George Thieme. 1922. With 40 illustrations. Pp. 106. 2*s.* 9*d.*

THIS volume of the series on diagnostic and therapeutic errors, edited by Dr. J. Schwalbe, deals with anomalies in the position and movements of the eyes, nystagmus, disturbances in the normal reactions of the pupil, exophthalmos and enophthalmos, alterations in the visual fields, and finally cerebral and psychic disturbances of vision. It appears to us to give an account of the subjects selected, which is good as far as it goes, but incomplete. No description at all of any operative procedure is included. On the other hand, the indications for and against tenotomy and advancement of the different muscles are given in great detail and with sound judgment. There is very little about the subject of heterophoria and nothing about its diagnosis or about its treatment with prisms, but the illustrations of the various varieties of squint and of the faulty positions of the head caused by muscular paralysis leave nothing to be desired. In the section on perimetry the only method of diagnosing small scotomata mentioned is Bjerrum's—a very good one no doubt, but one that has been usefully supplemented in recent years for the benefit of those practitioners whose consulting rooms are limited in space, and of these newer methods no mention is made.

The volume is easier to read than most German text-books and parts of it contain information not found elsewhere. In discussing the causation of retro-bulbar neuritis, for example, it is of interest to find that in the experience of the author only about 3 or 4 per cent. of the cases are due to affections of the nasal sinuses, and nearly half of the total to disseminated sclerosis, the proportion of cases in which no cause can be assigned being only 10 to 20 per cent. His point is that it may form the sole symptom of disseminated sclerosis that can be detected. Unfortunately we are not told how to differentiate these cases from the rest.

ECTODERMOSES NEUROTROPES.

Poliomyélite, Encéphalite, Herpès. Par C. LEVADITI. Monographies de l'Institut Pasteur. Paris: Masson et Cie. 1922. Pp. 269. Fr.24.

THE author is to be congratulated upon the issue of this excellent monograph. In his foreword he explains that a large proportion of experimental material in its composition is unavoidable, and is the outcome of a special training which makes him look at things from such a point of view, and put all hypotheses to the experimental test. We feel it is not without legitimate pride that he utters this half-apology. In a generation still disposed too meekly to accept pious opinion from authority, it is refreshing to find one who supplements every statement by experimental evidence: in consequence the book makes most interesting reading, and should be known to every pathologist and physician.

Much of the work upon which the monograph is based has from time to time been noticed in our columns. It embraces a clinical and experimental study of poliomyelitis and encephalitis, and, in addition, a general survey of such conditions,

including rabies, herpes, and vaccinia, as affect the skin or the nervous system and are traceable to filtrable viruses. In the portion dealing with poliomyelitis the author had the collaboration of K. Landsteiner; whilst P. Harvier worked with him upon encephalitis. In an interesting theoretical conception it is suggested that there is a closer affinity between the several conditions referred to than has been generally recognised; it is held that the fact that some diseases of this group—such as vaccinia—have a special affinity for the skin, whilst others are partially dermotrope and facultatively neurotrope—e.g., herpes—and yet others are purely neurotrope—e.g., rabies—may be really a point of similarity, since the nervous system is developmentally a derivative of the skin. Such a grouping is strengthened by the kindred characters of the viruses of the diseases, and it may well be that when these are discovered, and capable of examination in pure culture, the grouping which Mr. Levaditi has drawn up will be replaced by a similar one constituted on systemic bacteriology.

The book is sufficiently illustrated, but we notice that the lithographic plates are incorrectly numbered. In his preface Dr. Roux cites this work as an excellent example of the fertility of the Pasteurian method, the author having worthily followed the great traditions of the institute in which he has worked.

PHYSIOLOGY OF THE ASCENT OF SAP.

By Sir JAGADIS CHUNDER BOSE, M.A., D.Sc., LL.D., F.R.S., C.S.I., C.I.E., Director, Bose Research Institute, Calcutta. London: Longmans, Green and Co. 1923. Pp. 277. 16*s*.

THE problem of the ascent of sap in trees is an old one; important work on this subject was done by the Rev. Stephen Hales, whose researches on blood pressure are familiar to most medical readers. But Hales, and many after him, found that the problem of the ascent of sap was not to be solved by such simple experimental methods as were applicable to the investigation of arterial blood pressure. Botanical science waited long for its Ludwig, but at last the master of experimental technique, capable of attacking this and kindred problems materialised in the person of Sir Jagadis Chunder Bose. The apparatus of precision which he demonstrated in this country not very long ago were the admiration of all and the envy of some. It is with especial pleasure that we scan the present volume giving an account of the author's researches. Written in unexceptionable English, and very well illustrated, it is, we feel, destined to become a classic in botanical literature. Whether the author's theories find general acceptance or not, they represent a potent stimulus which experimental botany greatly needs for its development. The researches are the logical sequence of the author's work on the mechanism of plant movement; this he believes to be due to pulsatile contractility of the living cells. The ascent of sap is affected by stimuli and by external changes in the same way, and it is concluded that it also is due to contractile phenomena.

A MANUAL OF DENTAL ANATOMY.

Human and Comparative. Eighth edition. By Sir CHARLES TOMES, LL.D., F.R.S., F.R.C.S. Edited by H. W. MARETT TIMS, O.B.E., M.A., M.D., with the assistance of C. BOWDLER HENRY, L.R.C.P., M.R.C.S., L.D.S. London: J. and A. Churchill. 1923. With 325 illustrations. Pp. 547. 18*s*.

THE eighth edition of Tomes's Dental Anatomy follows on much the same lines as its predecessors, but there are some important modifications. The name of Prof. Hopewell-Smith has disappeared from the title-page; Dr. Marett Tims, assisted by Mr. Bowdler Henry, is responsible for this edition. The book has been considerably shortened by the use of smaller type, but it is hardly so pleasant to handle or to read as the previous edition. A noteworthy feature is the increased space given to the naked-eye anatomy of the human teeth. Some admirable drawings, the work of a student at the Royal Dental Hospital, accompany them. A dental student should know the anatomy of the teeth at least as well as a medical student should know the skeleton, for there is hardly a branch of operative dentistry in which such knowledge is not of importance. With the extension of the curriculum required for the L.D.S. comparative dental anatomy has receded somewhat in importance—we trust that it will never be abandoned—and in its place a more extensive knowledge of the human teeth is required. Hitherto there has been no modern text-book in this country which has dealt adequately with the shapes of the teeth of man, so that the account in this edition is doubly welcome. Indeed, we could wish that it was even fuller, for there are many points of practical importance left untouched. A section on the surgical anatomy of the teeth would be a useful addition. There is a good account of the recent work of L. Bolk on the development of the teeth, and his "dimeric theory" of the evolution of the tooth forms, which promises to engender as much discussion as the famous tritubercular theory, is adequately described. The two specimens of tooth formulæ quoted here do not correspond with those given by Bolk himself in the *Journal of Anatomy*.

So far as possible the original framework of the book as planned by Tomes is retained, but there are signs that it is becoming inadequate to the additions of new matter in successive editions; the book now reads somewhat jerkily and it is evident that the time for its drastic reconstruction is fast approaching. Yet, in spite of obvious defects in style and arrangement, it still remains indispensable to every student of the development and evolution of the teeth, and ranks as a contribution of first-rate importance to the literature of comparative anatomy.

A MANUAL OF PRACTICAL ANATOMY.

Part III.: The Head and Neck. By THOMAS WALMSLEY, Professor of Anatomy, Queen's University, Belfast. London: Longmans, Green and Co. 1922. Pp. 272. 10*s*. 6*d*.

THIS is the final volume of the excellent little dissecting manual, by Prof. T. Walmsley, the first two parts of which we have previously noticed. Part III. deserves as much commendation as its predecessors. We observe that Fig. 34 appears to favour the common though erroneous conception of the relation between the ninth nerve and the stylo-hyoid ligament; again, the relations between the nerve and the pharyngeal wall, as given some pages afterwards, are not too happily expressed. These are small blemishes, and we can congratulate the author on the production of a compact and useful practical guide to dissection.

GREEK BIOLOGY AND MEDICINE.

By HENRY OSBORN TAYLOR. London: G. G. Harrap and Co. 1923. Pp. 151. 5*s*.

THIS is an interesting little book forming one volume in a library which is appearing at the instance of a movement for acknowledging "Our Debt to Greece and Rome." This movement is American in origin, and most of its supporters, whose contributions make the issue of the volumes possible, reside in Philadelphia. Dr. Taylor has sketched in an easy simple style, but with real knowledge at the back, the influence of Greek biological and medical theories, and of classical medicine generally, upon modern therapeutics, thereby conforming to the design of the library as a whole, which is to show the vitality of the ancient thought, and the significance which it possesses in the development of intellectual life to-day. Dr. Taylor's summaries of the progress of medical science throughout the ages are just and well documented, and the little book serves excellently as an introduction to the fascinating study of the history of our art and science.

Reports and Analytical Records.

PITIBULIN.

(ALLEN AND HANBURYS, BETHNAL GREEN, LONDON, E.)

Post-pituitary solution prepared under the name of Pitibulin is derived from specially selected material and in the circumstances indicated may be relied upon as possessing high physiological activity. The use of pituitary extract in obstetrical practice, as well as its physiological action in collapse and shock, are well known, while contra-indications in certain stages of conditions of labour have also been much impressed upon the medical profession. Pitibulin is supplied in "Azoule" form ℿ7½ (½ c.cm.), 6*s.* 6*d.*; and ℿ15 (1 c.cm.), 12*s.* 6*d.* per dozen "Azoules"; "Azoule" Pitibulin, ℿ15, with adrenin, gr. 1/200, 14*s.* 6*d.* per dozen "Azoules"; and "Azoule" Pitibulin, ℿ7½, with adrenin, gr. 1/400, 10*s.* 6*d.* per dozen "Azoules."

NATURAL SALTS: BIOZONE BRAND.

(THE BIOZONE SYNDICATE, 28, BISHOPSGATE, LONDON, E.C.)

This preparation when analysed had the composition:—

Sodium bicarbonate	36·2 per cent.
Tartaric acid	26·2 ,, ,,
Sodium chloride	37·1 ,, ,,

On addition of water the granular mixture effervesces freely. Since the bicarbonate is slightly in excess of that required to neutralise the tartaric acid the resulting solution is alkaline. In the ordinary seidlitz powder Rochelle salt is a major constituent, but this is absent in Biozone salts and its place is taken by sodium chloride.

EDME MALT EXTRACT WITH COD-LIVER OIL.

(AGENTS: F. NEWBERY AND SONS, LTD., 27, CHARTERHOUSE-SQUARE, LONDON, E.C.)

The system of administering cod-liver oil in conjunction with malt extract has many advantages, among them being the avoidance of nausea experienced by people who cannot tolerate the undiluted oil. Messrs. Edme's product on analysis shows the following composition:—

Cod-liver oil	8·1 per cent.
Ash (mineral matter)*	1·38 ,, ,,
Proteins	5·74 ,, ,,
Water	14·10 ,, ,,
Malt carbohydrates, comprising maltose, dextrose, and dextrin	70·7 ,, ,,

* Containing phosphoric acid (P_2O_5) 0·6 per cent.

Active amylase is present in quantity, and the sample was entirely free from starch and salicylic acid. The total calorie value per pound of the mixture is 1762.

Cod-liver oil, as is well known, is one of the most valuable sources of vitamin A, while malt extract prepared, as in the present case, by mashing and concentrating at a low temperature, contains in addition the water-soluble vitamin B.

FREMLIN'S ENGLISH LIGHT BITTER ALE.

(MESSRS. FREMLIN, THE BREWERY, MAIDSTONE.)

When analysed this beer gave the following results:—

Specific gravity of wort before fermentation	1048·81°
Present specific gravity	1002·78°
Alcohol per cent. by volume	5·93
Extractives (total soluble matter, excepting ash, per cent.)	2·59
Mineral matter (per cent.)	0·25
Maltose (per cent.)	0·5
Dextrin (per cent.)	0·6

On removing the alcohol and fermenting with some additional yeast, 0·07 per cent. of free maltose disappeared, thus indicating that the beer was fully fermented and contained a mere trace of free sugar.

For a beer of this original gravity, the alcohol content is unusually high, thus ensuring palate fullness and keeping qualities. People of gouty or arthritic temperament who are forbidden malt liquors will find this bitter ale as free from objection as any we have encountered. The ale is attractive in appearance and palate, well gassed, and pours out bright to the last drop. No preservatives were detected. We examined this beer some years ago (THE LANCET, 1912, i., 1282), and our present analysis shows it to be almost identical in composition.

NASAL CREAMS.

(DUNCAN, FLOCKHART AND CO., EDINBURGH AND LONDON.)

Every medical man knows how often the right application to the nostrils brings remarkable relief to sufferers from various forms of irritation, and knows also that applications ordered without particular attention to their suitability may give no result, or lead to the aggravation of the uncomfortable conditions. Messrs. Duncan and Flockhart supply different forms of creams for nasal medication standardised according to whether the application is desired to be sedative (novocain), stimulating (oils of pine and eucalyptus, thymol, and menthol), astringent (zinc, tannic acid), antiseptic (carbolic and salicylic acids), or alkaline (bicarbonate of sodium). They supply also an iodised cream which contains 1 per cent. of free iodine in combination with pure carbolic acid. We can appreciate that many practitioners will like to know of these creams.

MANGANESE BUTYRATE AMPOULES.

(THE BRITISH DRUG HOUSES, LTD., GRAHAM-STREET, LONDON, N.)

This preparation, which is supplied in ampoules, is designed for the treatment of boils and carbuncles, whitlows, and other septic conditions, the first recommendation for the administration being that no incisions should be made into the lesion until two injections of manganese butyrate have been prescribed. The injection in some cases will abort the condition. Other indications for the use of the ampoules include erysipelas and gonococcal epididymitis, the injections in the latter case to be followed by contramine. The ampoules contain 1·5 c.cm. of a 1 per cent. solution, and are supplied in boxes of two ampoules at 1*s.* 6*d.* or six ampoules at 4*s.*

HUMAGSOLAN.

(HUMAGSOLAN, LTD., FARADAY HOUSE, 10, CHARING CROSS-ROAD, W.C.)

The remedy is the outcome of some experiments made by Prof. N. Zuntz, of Berlin, confirmed by A. Loewy (vide THE LANCET, Dec. 18th, 1920); they have been described by Prof. Dr. Carl Oppenheimer, of München in the Deutsche Allgemeine Friseurzeitung, 1920. A trial on a long-standing case of alopecia, the details of which are known to us, would seem to substantiate the claims for Humagsolan as a stimulator to the growth of the hair, but time, as far as this case is concerned, and further trial will be necessary before any more positive statement can be made. The preparation is put up in the form of metal-coated tablets, a month's supply of which is sold at the price of 12*s.* 6*d.*

LECTONA.

(LECITHIN, LTD., RICKMANSWORTH-ROAD, WATFORD.)

This is a tonic food prepared from fresh milk and malt extract combined with lecithin and vitamins, the preparation being designed to secure absorption of lecithin in an assimilable form without decomposition after administration by the mouth. The food obviously deserves trial, having been found of real value by many practitioners in cases of malnutrition and in various neuroses.

DRAYTON MILL TOILET PAPER.

(DRAYTON PAPER WORKS, LTD., SOUTH PARK, FULHAM, S.W.)

This toilet paper has been prepared with particular pains to ensure an even, soft, non-irritating material. It is supplied in rolls, "Iva," and in flat packets, "medicated manilla," and is already in employment in one of the large metropolitan hospitals, from which institution a valuable testimonial has been received.

THE LANCET.

LONDON: SATURDAY, MARCH 31, 1923.

RESTRICTIONS IN PRESCRIBING DANGEROUS DRUGS.

THE justifiable resentment of the medical profession continues to manifest itself towards certain aspects of the legislation as to dangerous drugs. There are two points in particular wherein the Home Office, however well-meaning, has been ill-advised. The first is the attempt in the Dangerous Drugs and Poisons Amendment Bill to draw a distinction between registered medical practitioners who are or are not in what is called "actual medical practice." This attempt, we are convinced, is mistaken and impracticable, and we are glad to learn that at the eleventh hour the Home Secretary admitted his error and withdrew the offending words. We need not dwell upon the terms of the Medical Act of 1858 which recognises only the description "legally qualified" or "duly qualified" medical practitioner. We need not recall the long years of special study and the stringent qualifying examination. It is enough to observe that the distinction which the words "in actual practice" seek to draw is wrong in principle and will be valueless in application. It has been decided judicially, we believe, that for the purpose of exemption from liability to jury service a barrister is "in actual practice" if, though he has never had a brief, he would consider the offer of one. We have heard of cases in which the authorities have sought to summon for jury service barristers who have either retired or have found non-legal employment. The barrister's answer in such a case is "My name is in the Law List; if you will send me a brief or ask me for an opinion I will show you whether I have retired or not." That answer has always proved conclusive. A barrister writing an opinion is in actual practice of his professional skill and training, no matter if he has been called to the Bar a dozen years and if this is the first opinion he has ever written. Similarly, a registered medical practitioner is in actual practice if he writes a prescription. Policemen and judges cannot say that he is not in actual practice until they can show that he has refused to prescribe. Is a medical practitioner who engages solely in research work not in actual practice of the special knowledge and professional principles in which he has been trained? If a qualified medical man is called upon to save life or alleviate pain, is he to answer that he has retired or is on holiday and therefore not in actual practice within the meaning of the Act? Or must he, before he prescribes, first swear an affidavit, in the nature of an income-tax return, setting forth his three years average of patients treated? The obnoxious words in the new Bill were to apply equally to registered dentists and registered veterinary surgeons, but we do not know how far the withdrawal here affects the position.

We pass to the second point—namely, the clause in the Dangerous Drugs Regulations of last October which forbids prescriptions to be given "for the use of the prescriber himself." On mere grounds of legality this provision is open to grave objection for the following reason. In delegating to departments the power to make restrictions of civic liberty Parliament has set up certain supposed safeguards against the abuse of that power. It has laid down certain conditions which the department must first comply with. We suggest that these conditions should be regarded as something more than a mere formality. Section 11 of the Dangerous Drugs Act of 1920 states that "every regulation made under this Act shall be laid before each House of Parliament forthwith," provision being added that either House may within 21 days thereafter present an address to His Majesty against an objectionable regulation, whereupon the offending clauses may be annulled by Order in Council. The precautionary requirement that the regulations must be laid before Parliament automatically attracts an additional precaution in an older statute. Under the Rules Publication Act of 1893 the Home Secretary, at least 40 days before he makes such regulations, must publish in the *London Gazette* a notice of his intentions, and during those days any public body can make representations and suggestions which "shall be taken into consideration" before the regulations are finally made. The Home Secretary duly announced his intention to make regulations by notice in the *London Gazette* of August 4th of last year. From that date the prescribed 40 days began to run. How far he took into consideration the representations and suggestions of public bodies we do not now inquire, since, as critics of the Rules Publication Act have pointed out, this supposed safeguard of public liberty is somewhat illusory. Government departments are in the happy position that they can either publish for criticism an objectionable clause and pay no heed whatever to the criticism, or they can publish a perfectly innocuous set of proposed regulations for criticism and then spring a complete surprise on the public by inserting an objectionable clause in the regulations when finally made. Up to this point, however, we will assume that the Home Secretary's action was unexceptionable, but his proposed regulations had no validity on August 4th of last year. They were merely a draft published for criticism for a period of 40 days, which expired during September. His next step was to make his final regulations. This he did on Oct. 2nd, 1922. It then became his duty to lay the result before Parliament *forthwith*. Parliament met on Nov. 20th, 1922. It met again on Feb. 13th, 1923. The House of Lords issue an official List of Rules and Orders presented during the session required by statute to lie for an appointed number of days on the table of the House. From this list we learn that these Dangerous Drugs Regulations of Oct. 2nd, 1922, were laid for a period which did not begin till March, 1923. Truly there is much virtue in "forthwith."

So much for the Parliamentary safeguards of the liberty of the subject. Whether a court of justice would hold that these regulations were rendered void by irregularity we do not presume to say, but pass to another aspect of the case. The clause that "the prescription shall not be given for the use of the prescriber himself" offends a principle of legislation more vital than any mere formality. It is futile to prevent a medical man from prescribing for himself if he cannot be prevented from having a stock of drugs in his consulting-room. When laws are futile, a court will not punish the citizen who breaks them. During the debate of Feb. 28th Sir SYDNEY RUSSELL-WELLS cited the case of a certain "very distinguished physician," who, while staying in a remote part of the country, was seized with violent abdominal pains. He wrote out a perfectly proper prescription and presented it to the village chemist. The latter declined to supply it unless on the prescription of another doctor.

The village doctor was some distance away attending a confinement. A brilliant idea struck the very distinguished physician. He wrote his wife's name on the prescription, obtained the medicine, went back to his hotel and drank it himself. In the eyes of the Home Office, we suppose, his manœuvre was a deliberate crime. But would any magistrate or judge inflict other than a nominal penalty in such a case? Laws which lead to such patently ridiculous situations had better not be made. We would add that when such laws involve penal consequences, it is more in keeping with our traditional notions of government that they should be made by Parliament itself and not by departmental ukase. The common sense of this matter can be stated in a very few words. No one is more familiar with the sinister results of the abuse of drugs than the medical practitioner. No one is more anxious to see the opportunities for that abuse drastically restricted. But neither in this nor in any other field of social effort will anything be achieved unless those who govern us are prepared to trust the medical profession.

THE IODINE PROPHYLAXIS OF GOITRE.

SINCE the war Switzerland has been attacking with good will the domestic problem of goitre. Its prevalence is obvious even to the casual visitor in almost all cantons, but especially in those of Aarau, Berne, Fribourg, and Valais. Arising early in life, the affection tends to be regarded lightly by the population which does not feel its inconvenience as a rule until the later decades; but the turning-point in the campaign has been the very serious deterioration of national physique in the offspring of goitrous persons, brought home by the act of mobilisation. Some 1900 Swiss recruits are discarded each year on account of lowly stature due in large part to cretinoid change, and Prof. A. OSWALD, of Zurich, has recently estimated at 50,000 the number of cretins recognisable at sight. Cretinoid idiots and deaf-mutes fill the asylums; 600–700 cretins are under institutional care in the canton of Berne alone, being 1 in 1000 of the inhabitants. And short of the need for segregation, there must be many degrees of thyroid insufficiency with more or less apathy and mental hebetude. Some there are who contend that it was this that kept Switzerland out of the war. The Swiss Commission on goitre which sat last June gave up its time largely to prophylaxis, and while some still maintained the infective origin of goitre and saw in the boiling of drinking water the means of prevention, CHATIN'S hypothesis, enunciated in 1850, held the field—that simple goitre is correlated with a low iodine content of drinking water.

Even before the year 1819 when COINDET, of Geneva, recommended iodine as a cure for goitre, it was common to see goitrous persons wearing necklaces of coral, amber, or seaweed, in the belief that goitre was affected by iodine content. TH. KOCHER put up the question long ago to the chemists whether the thyroid did not contain iodine and refused to modify his conviction on obtaining at first a negative answer; it was only in 1895 that E. BAUMANN, of Freiburg, devised his method for demonstrating the minute quantities present. BAUMANN'S discovery enabled him to conduct a painstaking research into the iodine content of the human thyroid in regions affected by goitre and free from it, with the result shown in the table. From this and other similar observations he concluded that the thyroid seeks by increase in size and surface to make up for the lack of iodine in neighbourhoods where the supply is scanty.

Number of glands examined	Place.	Mean weight of the glands in grammes.	Iodine content in milligrammes—	
			Of the whole gland.	Per gramme of dried gland.
30	Hamburg— Free from goitre	4·6	3·8	0·8
26	Freiburg— Average glands	8·2	2·5	0·33
12	Goitres	41·0	2·6	0·09

HUNZIKER described goitre in so many words as an adaptation to iodine-deficient nutrition. Dr. H. EGGENBERGER,[1] of Herisau, has recently set out the evidence regarding the diminution in iodine available for human consumption as the traveller proceeds from the sea-coast to the upland interior. In the neighbourhood of the sea the air and drinking water contain three times as much iodine as in Paris and ten times as much as in Switzerland, and CHATIN himself demonstrated how poor in iodine is the water of alpine valleys. Water is not the only source of iodine in the bodily economy—eggs, milk, and uncooked green vegetables provide a portion; but in the last resort all these derive their supply of iodine from the soil of the country. The same has been found true on the continent of America. A recent study from the Laboratory of Physiological Chemistry in the University of Minnesota[2] contains a map showing the inverse ratio between the amount of iodine in surface waters or waters of shallow wells and the distribution of goitre, the data being taken from the files of the defectives who were found among drafted men available in the war department. Sea spray is responsible for carrying iodine for many hundreds of miles from the sea-coast and from the Great Salt Lake.

Heretofore iodine has been given for goitre in doses vastly in excess of those required for prevention. The treatment, in fact, has itself been a danger. Hyperthyroidism is distinctly rare in Switzerland, but at least one-half of the cases of Graves's disease which do occur are attributed to excessive medical prescription of iodine. The amount of iodine required in the daily economy of the thyroid is, in fact, exceedingly small. HUNZIKER suggests that whereas goitrous patients formerly received as much as 1 g. daily of potassium iodide for weeks, in point of fact a 10,000th part of this daily dose, or 0·1 mg., had an anti-goitrous action, and, used in this way, 1 g. of potassium iodide would last 10,000 days or 27 years, and 3 g. suffice for a life-time. In a patient taking 5–6 drops daily of COINDET'S tincture free iodine can be demonstrated in the urine and the same has been shown for children after using the well-known chocolate iodo-starin tablets. The quantity needed being so small and the time over which it should be taken so long, the natural course is to incorporate iodine in some common article of diet. Table salt is the obvious carrier. Its advantages as a medium lie in the facts that all civilised persons daily take a certain definite quantity of NaCl varying from 5–20 g., that over-dosage is impossible, and that while table salt is not dear it possesses a certain market value and is therefore not likely to be wasted. Chlorides and iodides occur together in nature and agree well. After an intensive campaign of education by the Red Cross the canton of Appenzell decided last

[1] Schw. med. Wochenschr., March 1st, 1923.
[2] Simple Goitre as a Result of Iodine Deficiency. J. F. McClendon and Agnes Williams. Jour. Amer. Med. Assoc., March 3rd, 1923.

February to introduce the general use of so-called *Vollsalz*, containing an addition of 0·25 to 0·5 g. KI to every 100 kilos. With an average individual consumption of 10 g. a day this gives a daily dose of 0·025 to 0·05 mg. KI. The cost of prophylaxis on this scale would not exceed 1 centime a year for each inhabitant and the cost for the whole of Switzerland not more than 40,000 francs. Should this simple measure succeed, not only in hindering the development of goitre with its 2000 palliative operations each year, but also the cretinoid degenerations of all kinds in the offspring, its value can hardly be exaggerated.

CARRIERS IN INFECTIOUS DISEASES.[1]

KNOWLEDGE and experience concerning carriers in relation to infectious diseases have advanced rapidly in the years since 1903, when prominence was given to the subject by KOCH. A recent treatise by NICHOLS and KELSER[1] deals with over 26 bacterial diseases in which carriers are important. At least ten of these affect man alone, four concern the lower animals, and more than twelve others concern both man and the lower animals. Other diseases are mentioned in which carriers are probably of importance, but cannot be definitely recognised and traced for various reasons, largely because the infective agents are unknown or are filter-passers. The evidence has rapidly accumulated that in many, perhaps in most, infectious diseases the materies morbi is conserved and distributed to fresh victims more by the healthy or by quasi-healthy convalescents than by the sick. The difficulty in deciding which individual should be called a carrier and which a mild case of disease of long or short duration is a point at issue running through the literature of the subject. A carrier is defined by NICHOLS as "an individual who harbours and transmits pathogenic parasites without showing the usual evidences of infection." Little fault can be found with this definition, if it is allowed to include the mild and chronic forms of infection which, though distinctly pathological, do not show the commonly recognised acute symptoms associated with the disease. Such cases comprise inflammation of the gall-bladder and cholelithiasis due to persistent enteric infections, chronic rhinitis or tonsillitis associated with infection by the *Bacillus diphtheriæ*, infection of the udder of the goat with *M. melitensis*, and of the uterus of the cow with *B. abortus*. In these instances the persistence of the carriers is due to true chronic infections; these constitute the chief modern discovery which has accentuated the danger of carriers.

The pathology of chronic carriers deserves and receives considerable attention. NICHOLS and KELSER insist that the chronic carrier has usually, if not always, a localised infection, which implies a general immunity but an insufficient local immunity. Importance is rightly attached to the further search for methods which will be of use in curing the local infection. The nature of the case suggests that local measures are more likely to be effectual than general, since a general immunity already exists. The only hitherto successful means of treatment appear to be surgical, but X rays are suggested for certain cases. It is stated that excision of the gall-bladder cures 50 per cent. of biliary carriers, the condition being diagnosed by Einhorn's tube. Extirpation of the tonsils and treatment of nasal obstruction appear by all accounts to be successful in a large proportion of carriers of *B. diphtheriæ*. It should, however, be borne in mind that the carrier's general immunity may be low, especially in nasal carriers (membranous rhinitis), and either the Schick test should be performed and immunising measures adopted if necessary, or a precautionary dose of antitoxin given before the operation if the Schick test is for any reason impracticable. No countenance is given by NICHOLS and KELSER to the doctrine that *B. diphtheriæ* may be observed to become non-virulent during convalescence, but it is perhaps too hastily assumed that all "non-virulent carriers" are harmless and are in fact, according to the nomenclature used, "pseudo-carriers." This point does not seem to have been finally settled yet, and we deprecate the rough test of virulence of a *B. diphtheriæ* strain suggested by the manual. The results of such tests with impure cultures or without antitoxin controls are nearly always inconclusive, since diphtheria-like appearances may be produced by streptococci and a negative result may be due to other contaminations neutralising the toxin. The aspect from which the authors approach their subject is that of a public health officer and is eminently practical. NICHOLS insists (rather strongly, perhaps, to those of British habits of mind) that when the individual interest is in conflict with the welfare of the community the latter must always be allowed to prevail; but he recognises that the carriers (who may be numerous) also constitute a part of society and require consideration. He maintains that the carrier should be sought by the health officer or his specially trained ally, the "phorologist," who should be no narrow specialist, but a widely educated medical man with sufficient knowledge of clinical medicine, bacteriology, and epidemiology to follow the right line of search and form his own opinion on the evidence. It is necessary not only to find a carrier, assess his importance to the community, and prevent his doing harm, but also to localise the seat of his infection and, if possible, to cure it. The study of carriers in veterinary diseases is no less appropriate and fruitful than in human medicine, even apart from the numerous instances of interdependence of disease in man and other animals. The case of white diarrhœa in chickens is a remarkable one. The recovered chicks become carriers and, if hens, may carry the causal agent, *B. pullorum*, in their ovaries for life. The eggs are then infected and many become sterile; others hatch, and the resulting young brood are infected, and after spreading infection around them by their fæcal discharges either die or, living, perpetuate the disease as carriers. The blood serum of the infected birds gives evidence by an agglutination test of the carrier state and enables a campaign of eradication to be undertaken.

A defence of the study and importance of carriers is unnecessary at this date; indeed, more accurate information concerning their numbers and distribution in many diseases is still urgently needed, since their essential relation to the spread of disease is undoubted. This does not, however, imply that it is always necessary to discover and isolate carriers in order to check an epidemic or to prevent the occurrence of fresh cases of illness. It would be a serious error to attempt to investigate and deal with all carriers on the same lines. An intensive campaign for the detection and isolation of carriers of streptococci or *B. fusiformis* would be absurd in our present state of knowledge. Nevertheless, the search for carriers wherever practicable is worth while, if only to complete our knowledge of the natural history of disease. The correlation of the results of the Schick test and carrier work in diphtheria is already holding out much hope and giving encouragement for great gains in the near future. The study of the serological types of the *B. diphtheriæ* isolated from carriers and new cases is suggesting lines of advance, giving hints as to future means of tracing the topographical course of outbreaks, and perhaps even correlating the severity of the disease with special types of bacillus. During 1920–22 the average number of cases of diphtheria in London per annum increased to 15,128 from 8880 in 1911–20, and at the same time the carrier rate in schools rose from 7·5 to 10 per cent. Direct evidence of the danger

[1] Carriers in Infectious Diseases. A Manual on the Importance, Pathology, Diagnosis, and Treatment of Human Carriers. By Henry J. Nichols, M.D., Major, Medical Corps, U.S. Army; Instructor in Bacteriology, Parasitology, and Preventive Medicine, Army Medical School, Washington, D.C. With a Section on Veterinary Medicine by R. A. Kelser, D.V.M., Captain, Veterinary Corps, U.S. Army. Baltimore: Williams and Wilkins Company. 1922. Pp. 184. $3.50.

of carriers was not wanting. Dr. GRAHAM FORBES, in a recent communication to the Medical Officers of Schools Association, stated that he had found reason to associate this epidemic in London schools with the type III. bacillus. The curious observation that carriers of virulent *B. diphtheriæ* may, during non-epidemic times, attend school without either the spread of the bacillus to others or the occurrence of cases, is probably explained by the presence of a high proportion of immune scholars or by the relatively scanty distribution of bacilli which some carriers effect. The difference in the relative efficiency with which different carriers disperse the infection which they carry to their neighbours has often been noticed in the case of the enteric as well as in that of the diphtheria carrier. It is to be hoped that increased application of the Schick test in this country will throw light on the varying immunity of the population, and enable active immunisation to be carried out where required. The results of tests so far published by COPEMAN, O'BRIEN, EAGLETON, and GLENNY have given results comparable with those obtained in the U.S.A. and elsewhere. Correlation of the results with those of carrier examination has led and will further lead to important advances in theory and practice. There has never hitherto been sufficient accurate laboratory work available to meet the demands of the progressive health officer.

Annotations.

"Ne quid nimis."

ECLAMPSIA.

INNUMERABLE medical and operative procedures for eclampsia have been adopted and abandoned. Bozzi's dilator was practically invented for the treatment of eclampsia and is now generally found in the hospital museum; Cæsarean section, after an extensive trial, is generally condemned. Numerous drugs have also been tried, but the mortality has remained unaltered, between 20 and 25 per cent., irrespective of the variety or combination of treatment adopted, with the exception of two lines of treatment which have been followed during the past 20 years, more or less unchanged, and give a mortality result of about 10 per cent. These two treatments were instituted by Stroganoff and Hastings Tweedy respectively; the former has been carried out extensively on the continent and in America, while the latter has chiefly been adopted in Ireland. Both have suffered from incomplete acceptance and prosecution. On p. 666 of our present issue Dr. Gibbon FitzGibbon sets forth in some detail the Hastings Tweedy treatment as it is carried out in the Rotunda Hospital, Dublin. In commending his article to the attention of practitioners we would recall the conference on eclampsia[1] held at Liverpool in June, 1922, where the Rotunda method of preventing and treating this disease was acknowledged by several authorities to give good results compared with other methods, even though the theory on which it is based was not universally accepted. At the last annual meeting of the British Medical Association the matter was again discussed in the Section of Obstetrics and Gynæcology[2] and the case for the expectant and eliminative treatment still further established.

MENTAL HOSPITALS IN NEW SOUTH WALES.

THE Inspector-General of Mental Hospitals for New South Wales in his report for 1922 complains, apparently not for the first time, that the ten existing institutions are overcrowded. The lack of accommodation is particularly acute in the case of criminal lunatics, some of whom have at present to remain in the gaols. Otherwise the working of the mental hospitals is regarded as satisfactory, and the recovery rate of 43 per cent. is a high one. It is interesting to note that a Bill has been introduced to amend the Lunacy Act, by classifying patients into three groups, according to the degree of restraint they require. In the first group are those amenable to voluntary treatment in special wards of a general hospital; in the second "those who will be subject to detention where the exercise of same is in the patient's interest," these patients to be treated in special hospitals—the patient being admitted as a voluntary boarder and certified only if necessary subsequently; in the third group are those "who require compulsory detention either for their own protection or that of the public." There exists already a psychiatric clinic under the direction of Sir John MacPherson, where out- and in-patient treatment is available on a voluntary basis; there is also a voluntary home for inebriates, but no provision for the care of any but the certified is made as yet by the law of the State.

HOUSING IN SCOTLAND.

THE instalments of the Scottish Census have appeared in steady succession, and we have before us the twenty-eighth part of Vol. I., giving the statistics compiled from Census returns for the county of Perth. Vol. I. will be completed when the thirty-seventh part is issued. Each of these parts includes full particulars respecting the different parishes, burghs, and other administrative areas in each county, and a detailed statement as to age-distribution, orphanhood, and conjugal condition, and as to occupations, industries, birth-places, housing, and institutions within the county. From a comparative examination of the housing statistics of eight important counties in Scotland, it is now possible to derive a general impression of housing conditions in the northern country in the Census year. The general results are shown in Table I.

TABLE I.

Counties.	Percentage of houses (r. = rooms) containing—					Percentage of population living in houses with—				
	1 r.	2 r.	3 r.	4 r.	5 r. or more.	1 r.	2 r.	3 r.	4 r.	5 r. or more.
(1)	19·0	48·3	17·8	6·1	5·1	14·2	49·8	18·2	6·0	4·8
(2)	13·2	42·1	18·2	9·1	9·4	9·3	41·5	18·6	9·4	9·8
(3)	11·1	47·6	19·8	6·9	7·0	7·7	47·4	20·3	6·8	6·6
(4)	8·2	36·1	23·1	13·1	9·6	4·8	34·3	23·1	13·1	9·3
(5)	6·1	42·6	24·9	11·6	8·1	3·6	40·5	25·8	11·6	7·9
(6)	5·1	20·8	26·0	14·8	20·3	2·1	15·9	25·4	14·9	21·7
(7)	5·0	24·9	24·3	14·5	16·4	2·1	20·2	23·5	14·4	17·1
(8)	4·1	28·8	28·7	11·5	15·5	2·1	24·0	29·9	11·7	16·5

Counties.—(1) Lanark. (2) Ayr. (3) Dumbarton. (4) Midlothian. (5) Fife. (6) Inverness. (7) Perth. (8) Kincardine.

The proportion of dwellings comprising only one room varied from 4·1 per cent. in Kincardine to 19·0 per cent. in Lanark (including Glasgow). The counties of Ayr, Dumbarton, and Midlothian (including Edinburgh) came nearest to Glasgow and greater Glasgow in respect of the high proportion of one-roomed dwellings, while in Fife, Inverness, and Perth housing conditions were less unfavourable. Of course, some dwellings are occupied by single persons and some by married couples without children; but a dwelling comprising less than three "windowed rooms" cannot be regarded as satisfactory; and it is significant that housing in Lanark, Ayr, and Dumbarton stands condemned in this respect for more than half the total dwellings in these counties. The classification of houses by number of rooms can be checked by the statement in the latter half of the preceding table, which shows the proportion of the total population which at the time of the Census was living in houses of different sizes. In Lanark 14·2 per cent. of the total population dwelt in single rooms, and 64 per cent. in one or in two rooms. In Ayr 50·8 per cent. of the total population lived in one or in two rooms, the proportion in other counties thus unsatisfactorily housed being

[1] See THE LANCET, 1922, ii., 89 and 144.
[2] Ibid., 1922, ii., 713.

as shown in the table. The conditions thus indicated are deplorable. It may be urged, however, that it is small families especially which live in these one- and two-roomed dwellings. The second half of Table I. goes far to disprove this explanation; and the real facts are shown, in part, in Table II., which has been extracted from other parts of these Scottish reports.

TABLE II.—*Percentage of the Population per Room.*

—	More than 4 persons to a room.	Not more than 2 persons to a room.
Lanark	15·2	42·4
Ayr	12·1	50·4
Dumbarton	10·6	49·1
Fife	6·4	58·2
Midlothian	4·4	65·8
Kincardine	1·5	73·4
Inverness	1·4	79·6
Perth	1·2	80·6

All rooms having windows are reckoned as dwelling rooms, and not only living and bedrooms, but also kitchens and sculleries are included in the accommodation as shown in the above table. Including such rooms, nearly 81 per cent. of the dwellings in Perth did not average more than two persons to a room, in Lanark the corresponding proportion was 42·4. In Lanark 15·2 per cent. of the total dwellings had living in them more than four persons to a room (defined as above); in Ayr 12·1 per cent., and in Dumbarton 10·6 per cent. were thus overcrowded.

The figures speak for themselves. The desire for good housing in a large part of Scotland is lamentably low, or there is lamentably deficient housing accommodation, or both these causes of insanitary overcrowding are operating to an extent which is nationally discreditable. Nor can there be doubt as to the mischief arising from family life in one, in two, or even in three rooms. The startling figures published by the late Dr. Burn Russell as to one-roomed dwellings in Glasgow are well known. They have been supplemented by more recent and carefully corrected statistics prepared by Dr. A. K. Chalmers, which show the excess of acute infectious diseases, of tuberculosis, and of nutritional diseases, and of infant mortality in the smaller dwellings; and Sir Leslie Mackenzie contributed to the Scottish Housing Commission's report an eloquent indictment of the results of bad housing in Scotland. To argue that bad housing is chiefly an index of the low standard of physique of intelligence and morality of those thus housed is a *petitio principii*; and no social well-wisher can be satisfied until the public conscience has been aroused to supply the deficiencies of housing accommodation and to educate all wage-earners to a standard of life which will not be contented to accept less than is necessary for health and morality.

HÆMATEMESIS IN NEPHRITIS.

ACCORDING to Dr. Howard F. Shattock[1] of the Postgraduate Hospital, New York, who records an illustrative case, hæmatemesis is an unusual complication of chronic nephritis, and when it does occur is rarely profuse. Richard Bright himself, in 1829, spoke of gastric and intestinal hæmorrhage in some cases of nephritis, but he regarded the occurrence merely as a coincidence without any ætiological relationship between the two conditions. Even before Bright, Latour, in 1815, described epistaxis and other forms of bleeding in dropsy, and earlier still Morgagni reported the case of a woman with the odour of urine in her breath, who vomited blood, and had epistaxis with favourable results. Later the association of various forms of hæmorrhage, including gastro-intestinal hæmorrhages in nephritis and uræmia, were noted by a number of observers, including George Johnson and Moxon in this country, and Fournier, Lancereaux, Mathieu and Roux in France, most of whom described the intestinal hæmorrhages which were more frequent than the gastric. Riesman regards renal disease as the cause of the hæmorrhagic diathesis, the factors being hypertension, arterial disease, and toxæmia. No uniform pathological findings have been reported in these cases, so that no conclusions can be drawn as to the causes or pathology of hæmatemesis in nephritis. In Dr. Shattock's case, which occurred in a woman aged 31, hæmatemesis of a "cupful" of blood was not preceded by any abdominal pain or other symptoms referable to the gastro-intestinal tract except anorexia, nausea, and vomiting during the last three months. Slight hæmatemesis recurred on three occasions during the first 24 hours after the first but not subsequently. The urine had a specific gravity of 1010–1016, a persistent faint trace of albumin and a few casts. The blood-urea was low; 11·4 mg. per 100 c.cm. of blood and the uric acid was increased; 3·5 mg. in 100 c.cm. of blood. The blood pressure was 194 systolic, 124 diastolic. Temporary improvement took place under treatment, but death from uræmia occurred seven months after the hæmatemesis. Autopsy was refused.

[1] American Journal of the Medical Sciences, February, 1923.

GOVERNMENT GRANTS TO VOLUNTARY HOSPITALS.

THE Voluntary Hospitals Commission have now dealt with all the applications for grants in respect of 1921, except for a limited number of areas in Scotland in which Local Voluntary Hospital Committees were late in being established. The total deficits reported to the Commission amounted to £295,170 for London, £425,727 for the rest of England and Wales, and £15,340 for Scotland. The total deficits reported for the whole of Great Britain amounted to £736,237, as compared with the estimate of £1,000,000 by Lord Cave's Committee on which the Government grant of £500,000 was based. Grants totalling £424,983 have now been made on the basis of pound for pound of new money raised or in sight, except in a limited number of cases in which emergency grants have been made to hospitals, which had exhausted their realisable assets and without assistance from the Commission would have been compelled to close beds. The grants are as follows: London, £225,000; England and Wales[1] (excluding London), £194,242; Scotland, £5741. The London hospitals have received their full share of the grant, but a balance of £75,017 still remains for distribution in the rest of England, Wales, and Scotland. This balance has been apportioned on the basis of Lord Cave's estimate as follows: England and Wales, £45,758; Scotland, £29,259. The Local Voluntary Hospital Committees in England and Wales and the Consultative Committee in Scotland are being asked to formulate proposals, subject to the Treasury conditions, for the distribution of these balances towards the liquidation of the deficits which accumulated prior to 1921.

[1] Includes a grant of £3950, which has not yet been paid.

CONJUGAL INFECTION IN TUBERCULOSIS.

Dr. Paul Roussel, assistant physician to the Sanatorium des Pins and the Villemin Dispensary at Nancy has made a valuable contribution[2] to our knowledge of a much debated subject. At the dispensary he found that husband and wife were both tuberculous in 11·6 per cent. of 423 families investigated, and with 25 per cent. of tubercle among the children. The figures led him to conclude on further scrutiny that in 11·6 per cent. of *open* pulmonary tuberculosis conjugal infection had occurred, and 37·5 per cent. of the children were infected; if *all* cases were included the cases of conjugal infection dropped to 5·2 per cent. and the infection-rate of the children to 25 per cent. It is noted that conjugal infection is in general milder than other infections, especially those of children, the difference being explained by a "surinfection" in one case and a "primoinfection" in the other; that is by the

[2] La Tuberculose Conjugale: Contagion et Mariage. Paris: A. Maloine et Fils. 1922. Pp. 140.

results of allergy. Dr. Roussel finds the phenomena of allergy to vary with the dose of toxin, the number of doses, and the interval between each. This also explains why the children of tuberculous parents often pick up so remarkably when removed even temporarily from further infection. An infection frequently repeated at short intervals seems the most dangerous, and it is the type of primary infection which determines the widely diverging conditions met with in those who have a family history of tuberculosis rather than different forms of heredity.

Dr. Roussel has no doubt that the marriage of persons with open, or progressive, tuberculosis should be forbidden, but in the case of healed tuberculosis there is room for discussion, which must be preceded, however, by an understanding of what is meant by healed tuberculosis. If a few years have elapsed without symptoms, marriage may be allowed. It seems as if the influence of the medical man in preventing the marriage of tuberculous subjects is greater in France than in this country. The author recognises the great difficulties of isolating tuberculous husbands or wives in the home; some of the difficulties encountered by health visitors at Nancy are narrated and practical suggestions are made. A separate room is of the first importance and, if unattainable, a space of at least 5 feet should intervene between the beds. Special precautions are recommended during pregnancy. Much importance is attached to nocturnal isolation, family contact during the day being rightly considered of far less moment. The author, however, seems to emphasise insufficiently the danger of the early morning cough. The Villemin Dispensary is happy in having at its disposal for loan to patients a supply of hygienic bedsteads and bedding, a step which has hardly been tried in this country. Dr. Roussel concludes his study with two quotations which suggest to him an optimistic outlook: "However fertile a field, the only seeds to grow are those sown by the farmer, the birds, or the wind" (Calmette); "The forest of Fontainebleau is strewn with acorns which will never become oaks" (Vallin).

VENTILATION IN WEAVING SHEDS.

RECENT progress of knowledge in the science of ventilation has been bound up with various attempts to solve the problems of atmospheric conditions in humid weaving sheds. No great success attended the earlier efforts which were made. First, in reliance on the theory of chemical impurity, 600 cubic feet of fresh air per hour per person employed was called for; next a carbon dioxide standard (not to exceed 9 parts per 10,000) was fixed; at the same time permissible limits of humidity were determined. But, throughout, that most delicate of reagents, the human body, personified by the Lancashire operative, declined to be satisfied with the steps taken. The work of Haldane, L. Hill, and Boycott upon the effect of wet-bulb temperatures on body heat followed; then came physiological observations on weavers themselves by Pembrey and Collis; and lastly, the introduction of the kata-thermometer by use of which the long-time complaints of the weavers are being justified. All is set forth in an excellent preface to the latest report of the Industrial Fatigue Research Board.[1] The report itself, which contains statistical tables and graphic diagrams, is based upon data collected at hourly intervals during winter and summer with regard to the cooling power of air in weaving sheds; seven "humid" sheds—i.e., with installations for humidifying the air—and one "dry" shed were investigated. In the dry shed the cooling power and evaporative power of the air was higher than in the humid sheds. Generally speaking, in the humid sheds the wet-bulb temperature was found to rise through the day, and simultaneously atmospheric conditions became less satisfactory. The conclusion arrived at is that the operatives in these sheds are exposed to atmospheric conditions which are physiologically unsatisfactory, and the suggestion follows that the cooling power of the air should be sufficient to prevent visible sweating, a standard difficult to maintain when the temperature rises above 70° F. Nevertheless, shed temperatures and humidities are, within limits, under the control of the management. The air in humid sheds was found to compare unfavourably with that in other factories investigated, such as engineering, shoemaking, laundries, and potters' shops. The conclusion of the matter is that weavers require more air movement, and that devices are needed to bring this about without impairing the weaving quality of the cotton. There is here an antagonism between the human body and the cotton thread; what is good for the latter, is not beneficial to the former. A further report is promised dealing with variations in efficiency in weaving; but, as is pointed out in the preface, information is still lacking as to what effect, if any, the discomfort complained of by the weavers has upon their general health. We are glad to note, however, that this matter has not been lost sight of, and is to be investigated.

[1] Atmospheric Conditions in Cotton Weaving. W. Wyatt. Industrial Fatigue Research Board. Report No. 21. 1923. Pp. 36. 2s.

DEATH FOLLOWING NITROUS OXIDE ANÆSTHESIA.

AT a recent meeting of the Société de Thérapeutique, of Paris, Dr. Étienne Chabrol[1] reported the case of a woman, aged 50, who developed symptoms of apoplexy a few hours after an operation for epithelioma of the breast, under nitrous oxide anæsthesia. The operation, which was carried out by M. Labey at 9 A.M., consisted in amputation of the left breast and clearing out the axilla. Owing to the abundance of metastases the patient was kept under the anæsthetic for an hour and a quarter. About three hours after termination of the operation she came round from the anæsthetic, but almost immediately afterwards sank into a deep sleep. She was still asleep when seen by Dr. Chabrol at 5 P.M., but no facial deformity was noticed at that time, and the pulse was normal. At 8 o'clock on the following morning Dr. Chabrol was at once struck by the presence of left facial paralysis, which was accompanied by hypertonus of the lower limb and Babinski's sign on the same side. In spite of bleeding and the application of leeches over the right mastoid the signs of apoplexy rapidly became more pronounced and death took place at 5.30 P.M, exactly 32 hours after the anæsthetic. No mention is made of an autopsy. Apart from Paget's disease of the nipple, which had preceded the epithelioma of the breast for several years, the patient had always enjoyed good health. A week before the operation the heart, blood pressure, and urine were found to be normal, and the Wassermann reaction was negative. A few hours after the anæsthetic 100 c.cm. of urine were obtained and showed a trace of albumin. Examination of the blood a few hours before death showed 1·15 g. of urea per litre. In his comments on the case Dr. Chabrol remarked that Chevassu and Rathery, at the Congress of Urology, held at Strasbourg in October, 1921, had emphasised the danger of nitrous oxide anæsthesia in patients with hypertension. The present case showed that in the administration of this anæsthetic the probable duration of the operation and the age of the patient should be taken into consideration. In operations of short duration laughing gas deserved the reputation which it enjoyed in dental surgery, but in operations likely to last an hour or more a case of this kind should serve as a warning. The patient's age was a more valuable guide than the best blood-pressure apparatus, as it indicated the possibility of localised vascular sclerosis, which, as the present case exemplified, was not always revealed by the peripheral blood pressure.

[1] Bulletin de le Société de Thérapeutique, Feb. 14th, 1923.

THE FUNCTIONS OF THE PARATHYROID GLANDS.

NOTWITHSTANDING the large amount of work done to determine the functions of these organs, our exact knowledge of their physiology is even now singularly limited; the observations of Harald A. Salvesen, of the Physiological Institute of the University of Christiania, are the more welcome.[1] Of the many theories as to their functions, only three have gained some importance—viz., that the parathyroids control (1) the guanidine metabolism, and so regulate the tonus of muscles; (2) the calcium metabolism, and (3) the acid-base equilibrium, their removal causing alkalosis. Like others of the ductless glands, they are supposed to control the sugar metabolism to some extent. Salvesen has studied more especially the changes in certain constituents of the blood that follow upon partial and complete parathyroidectomy in dogs, care being taken to leave enough thyroid tissue to prevent cachexia.

First, as regards partial thyroidectomy, three glands were removed; and in no case did the dogs operated on show any symptoms of tetany, and apart from a little depression and loss of appetite in the first few days, showed no symptoms at all. The blood-sugar was unchanged, the alkali reserve was usually lowered the first few days after the operation and corresponding to this lowered alkali reserve there was an increase of acid elimination; the serum calcium decreased from a normal value of 10 mg. to a minimum of 7 mg. per 100 c.cm. Within two weeks the calcium was restored again to the normal. By way of control, to a normal dog were given large doses of N/10 hydrochloric acid for three weeks; there was a heavy drop of alkali reserve, but the calcium was unchanged. The calcium decrease found in partial parathyroidectomised dogs cannot be due to acidosis, and it was also found that it was not due to the anæsthetics used.

Complete parathyroidectomy was performed in 10 dogs—in 4 all the parathyroids were removed at once, and in 6 three glands had been removed previously. All of these 10 dogs developed acute tetany; 5 of them died untreated within 3½ days. Four were preserved by treatment and passed into a state of latent tetany. During the development of the symptoms in acute tetany, the blood-sugar was unchanged, and there was no hypoglycæmia even during the most acute symptoms shortly before death. The alkali reserve almost invariably decreased after the operation; it might be normal even during tetany, and corresponding to this decrease there was an increase of the excretion of acids, but no evidence of alkalosis. Calcium dropped from the normal value of 10 mg. per 100 c.cm. serum and was, when tetany occurred, always below 7 mg., usually much lower. There seems to be in this acute stage a certain relation between the degree of lowering of the calcium and the violence of the symptoms. The inorganic phosphorus of the blood serum increased considerably.

Some observers have noted that in spite of the intravenous injection of calcium chloride, parathyroidectomised dogs die, and have come to the conclusion that the decrease in calcium found in tetany is not to be regarded as the essential cause of the symptoms. The author, however, finds that a total of 2 g. a day injected intravenously checked the symptoms, but that next day there was violent tetany, which could again be checked by an injection. It was also found that whenever convulsions reappeared after injection, the serum calcium fell to the same low level again, indicating that the injected calcium was disposed of in some manner. Experiment showed that there was excreted an amount of calcium corresponding to the amount injected, but more than nine-tenths was excreted in the fæces, and less than one-tenth in the urine. The rapid disappearance of calcium may explain why calcium treatment reported by previous observers fails to keep the animals alive.

Completely parathyroidectomised dogs, however, may be kept alive, and to all appearance normal, by proper feeding, though a condition of latent tetany may exist. Of four such dogs two recovered spontaneously during milk feeding, and the other two after vigorous calcium treatment—1 to 2 g. of calcium chloride a day intravenously—combined with milk feeding. After a week or two the calcium could be omitted without any symptoms, and the dogs were to all appearance normal on a milk diet. These four dogs could be kept alive indefinitely on this diet. They could, however, be brought into a state of tetany—usually within 24 hours—by changing the diet to meat. Such dogs—apparently normal—had one characteristic finding in the blood: the calcium was still low—usually between 5 and 6 mg. The inorganic phosphorus was usually at the upper border of the normal level or above. Dogs fed on milk diet—500 c.cm. a day, with bread and porridge—after the first critical period was passed, could be kept without symptoms for as long a time as wanted. Meat always produced tetany, loss of appetite, and depression. Experiment showed that it was the withdrawal of milk which produced tetany, not meat diet in itself, and the author concluded that milk contains substances which prevent tetany. This substance proved to be calcium, of which milk contains 1·2 g. per litre, corresponding to 10 g. of calcium lactate. Milk from which 90 per cent. of the calcium was precipitated is useless in preventing tetany. If, however, soluble calcium salt was given, the dogs kept normal on any diet. Now when meat was given in excess, the dogs increased in weight and were normal in all their actions. Analysis of serum calcium always showed that at the moment when the symptoms were relieved, there was an increase in the calcium content of the blood, showing that it is the actual absorption of calcium which cures the symptoms. The same increase in serum calcium was seen when milk checked the symptoms. The protein metabolism in dogs with latent tetany, on a milk diet and without symptoms, was normal. The non-protein nitrogen and blood-urea were normal both in the latent state and during tetany, and the blood-sugar was unchanged in both these states. The tolerance for glucose given orally was lowered, and the lowered tolerance is not due to increased permeability of the kidneys, but to a functional disturbance of the glycogen-forming organs. There would seem to be a relation between sugar tolerance and blood calcium in these animals. Guanidine injections in a normal dog in amounts large enough to produce violent convulsions did not alter the serum calcium, but produced hyperglycæmia and lowering of the alkali reserve; phosphates remained normal.

These experiments show that the characteristic feature in the chemistry of parathyroid insufficiency is the drop in blood calcium, which is more marked the more parathyroid tissue is removed. They suggest that the parathyroids control the calcium metabolism, and by doing so they influence the functions not only of the muscle and nerve tissue, but probably of all organs. When the parathyroids are removed, the threshold for the excretion of calcium in the intestines is lowered.

[1] Proc. Soc. for Expt. Biol. and Med., vol. xx., No. 4, 1923.

THE PATHOLOGY OF INFLUENZA.

AT a meeting of the Pathological Section of the Sheffield Medico-Chirurgical Society, held on March 22nd, Prof. J. G. Adami gave a survey of the development and pathology of the great influenza outbreak of 1918. It had been his task, he said, to draw up a general report on influenza affecting the troops. Although finished two years ago, unfortunately this report had not yet been published. The commencement of the epidemic was usually set down as April or May, 1918, but sporadic groups of cases, often called "purulent bronchitis," and apparently influenzal, had occurred as far back as December, 1916. He would, therefore, regard the epidemic as presenting three successive phases in its development: (1) From December, 1916, to May, 1918—sporadic groups of cases; (2) from May to August, 1918—great number of cases of short duration comparatively mild, the "three days' flu"; (3) the autumn months of 1918—a very great number of severe cases with an appalling mortality, chiefly from pneumonia. Prof. Adami enumerated certain things which helped the pathologist to explain the protean manifestations of the disease. One and the same

organism might cause different lesions in different stages of the epidemic, owing to its having acquired a higher degree of virulence as the epidemic progressed. Secondary invasions were common. The sporadic cases of purulent bronchitis usually presented the following features: Acute bronchitis and bronchiolitis with pus in the lumen, denudation of the lining membrane, and the presence of a small Gram-negative cocco-bacillus; the air-cells were but little affected. The most striking changes were found in the smaller bronchi; in the later stage the smaller bronchioles were often found completely denuded of mucous membrane. In some of these cases Pfeiffer's bacillus was grown in pure culture from the secretion in the terminal bronchioles. The influenzal nature of the majority of these cases before 1918 was not recognised, but the pathological lesions were essentially similar to those found in the influenza cases of 1918. A cardinal feature in the 1918 cases was the regular presence of tracheitis. The larynx and uppermost rings of the trachea usually escaped; but the bifurcation and lower third of the trachea were almost constantly acutely inflamed. Here intense purple congestion was followed later by desquamation of the ciliated epithelium. This acute desquamative tracheitis and bronchitis apparently commenced near the bifurcation and spread both upwards and downwards. Prof. Adami regarded it as of great significance. Removal of the ciliated epithelium at this spot removed the last effective barrier to the invasion of the lungs by inhaled micro-organisms. This helped to explain the great frequency of secondary invasions in influenza. It was significant, further, that the secondary infections met with most commonly were from those organisms which were least susceptible to the bactericidal action of serum. Further, it should be remembered that it would be precisely on this area—the neighbourhood of the bifurcation of the trachea—that those micro-organisms which had succeeded in passing the defences of the upper air passages would be likely to impinge. The difference in the lesions found in the lungs in the last and most severe stage of the epidemic from those previously found in the earlier and less severe cases was largely explained by the increase in virulence of the bacillus already referred to. A classical observation of Metchnikoff's illustrated this point: he injected anthrax virus into the two ears of a rabbit; in one ear a strongly active virus was used, in the other an attenuated brand. The attenuated virus caused cellular infiltration; the stronger virus produced serous exudation and hæmorrhages. This difference corresponded with that found in the lung lesions of the less and more severe cases of this epidemic. As regards secondary invasions, the pneumococcus, a hæmolytic streptococcus and *Staphylococcus albus* were those most frequently found.

Summing up his observations, Prof. Adami considered the following postulates justified: (1) One agent and one only was primarily responsible for the cases of the pandemic; (2) this agent was the influenza bacillus; (3) in the majority of cases other organisms invaded the lung and were responsible for many of the conditions found in fatal cases. He considered that pathologically the cases studied presented a characteristic series of changes which in their totality, in their succession and association, were specific and peculiar to this one disease. He especially emphasised, in this series, acute tracheitis characterised by denudation, and acute bilateral bronchitis and bronchiolitis, with purulent exudation in the milder cases, sanguineous in the more virulent, with comparatively little involvement of the air-cells. Prof. Adami concluded by pointing out how closely Nothnagel's account of the pathology of the great epidemic of a generation ago corresponded with our later findings.

Mr. Stephen Paget contributes an introduction to "Medical Practice in Africa and the East," which is about to be published by the Student Christian Movement. The book is a series of open letters on professional subjects from doctors practising abroad, addressed primarily to their colleagues at home.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XIII.

THE TREATMENT OF ECLAMPSIA.

THE treatment of eclampsia adopted in the Rotunda Hospital, Dublin, is aimed at the elimination of a toxin. The treatment is the same whether the patient is before labour, in labour, or post partum. The occurrence of eclampsia without preceding symptoms is extremely difficult to accept. I have never seen a case of eclampsia in which the urine had been examined previous to the onset of fits and found free from albumin. It is quite impossible to dissociate the eliminative treatment of eclampsia from the treatment of toxæmic albuminuria and the advanced stage of this, known as the pre-eclamptic state. The treatment may therefore be divided into three parts, none of which should be called prophylactic; this term is only applicable to the treatment of patients in the normal pregnant state so as to prevent the development of toxæmia of which eclampsia is only a terminal feature.

Toxæmic Albuminuria.

Whenever even a trace of albumin is present in the urine of a pregnant woman, the patient is put on a saline laxative in sufficient dosage to maintain a free action of the bowels twice or three times in the 24 hours. All meat diet is stopped and other diet reduced to a minimum for a few days. The patient must drink two or three pints of water daily. If the case is early the albumin will usually disappear in a day or two and the patient can be carried through pregnancy without a recurrence, if the diet, especially meat, be restricted, the bowels kept free, and a large water intake insisted on. Multiparæ respond less readily to treatment than primiparæ. In more advanced cases, when the urine is reduced in quantity, contains much albumin, and œdema is present, the patient is kept in bed, and all food stopped; saline purgatives are given eight-hourly until the bowels act several times a day, and then sufficiently often to maintain two or three movements daily. The patient drinks six pints or more of water in the 24 hours. This is continued for several days, during which the urine secreted invariably increases rapidly to over 40 oz. per diem, the œdema disappears, and the patient is usually free from symptoms in two to four days, with normal or nearly normal urine. Diet is then started, beginning with a half pint of milk; tea may be given freely. If the improvement is maintained another half pint of milk and a slice of bread and butter are given in the next 12 hours, and next day milk-pudding is added and the milk increased to two pints; if no relapse occurs, the patient is allowed a restricted white diet through the remainder of the pregnancy, any relapse being actively treated on the first indication of failure of the renal function, as shown by diminution of secretion or albumen recurring.

The Pre-eclamptic State.

When the toxæmia has become profound the same line of treatment is followed, but if there is marked drowsiness, or if the patient happens to have started labour, she may be treated as if eclampsia had developed. A strict water diet may have to be maintained for eight or ten days. If there is marked improvement a very light diet may be allowed; the albumin is unlikely to disappear completely. The majority of cases, particularly the primiparæ, are within one to three weeks of term and labour may set in while active treatment is in progress. In these circumstances a strict water diet is essential and should be maintained for at least a day or two after delivery. If labour does not start a case can be

carried on for three or four weeks on what is apparently a quite insufficient diet, or on water only for 14 days. Patients in the last two weeks of pregnancy may be allowed to fall into labour spontaneously, but otherwise it will probably be better only to carry a profound case of toxæmia over the thirty-eighth week and then to induce labour. The fœtus suffers no disadvantage. If the fœtus is dead, labour should be induced as soon as the patient is improved, before any attempt at diet is made. Multiparæ are likely to develop severe symptoms much earlier than primiparæ and to be less responsive to treatment. If the primary improvement is not maintained by strict treatment the pregnancy must be terminated without further delay. No case of toxæmic albuminuria which receives this treatment for 24 hours will develop eclampsia. Some may not improve sufficiently for the continuation of pregnancy to be contemplated, but all will improve sufficiently for labour to be induced without hurry. All cases of severe toxæmia are best treated out of their own homes, since effective treatment entails starvation. Constant watching in a good light is essential so that the colour of the face can be clearly seen and cyanosis recognised immediately. A comatose patient makes no effort to clear the respiratory passages, if obstruction occurs; she merely becomes cyanosed and dies if the obstruction is not cleared in time.

Eclampsia.

The treatment of eclampsia is merely an adaptation of the treatment described above to suit the more urgent demands of the case. The first care is during the actual convulsion, to prevent injury to the tongue. If premonitory signs are noted something must be placed between the teeth before the tonic spasm develops; otherwise no attempt must be made to separate the teeth until the jaws relax at the start of the clonic stage, when a gag can be placed and retained during the spasm. The patient is rolled over slightly on her face so that all secretions run out of the mouth. Delay in beginning respiration when the clonic stage is over is due to obstruction, not to apnœa, and, therefore, if the patient does not spontaneously inspire, the chest should be pressed upon or the upper shoulder pushed back.

Posture.—The patient is put in the Sims position, with a single pillow under the head. If the patient moves she must be brought back to the lateral position when quiet or sleeping. Nothing should ever be given by the mouth until the patient is sufficiently conscious to drink from a cup.

Elimination of Toxins.

Gastric Lavage.—This is carried out on all patients, except those who are sufficiently conscious to drink freely and have not had a meal for over six hours. A large-sized stomach-tube is passed and the stomach washed out with bicarbonate solution, one drachm to the pint, until the return is quite free from gastric contents. Mistura sennæ co., with an extra drachm of sulphate of magnesia to the ounce, in a ℥iv. dose, or ℥iii. of castor oil, is then run into the stomach with about a pint of bicarbonate solution. If a fit occurs the mouth can be kept open with a gag and the lavage continued. Lavage is not required more than once, but if coma persists the tube is used to introduce a purgative and, in cases without œdema, the bicarbonate solution, until the patient can drink.

Colon Lavage.—The rectum is cleared of all solid fæces, a finger is passed in and the end of a No. 24 stomach-tube guided through the constricted portion of the gut between the second and first parts of the rectum. The tube is then passed for 14 to 18 inches. It will sometimes be found easier to pass the tube with the fluid running, and this should always be allowed once the constriction is passed. The bowel is then irrigated in and out with two to three pints of fluid at a time. At first the fluid returns slowly bringing some fæcal material; it then becomes clearer and after a period returns more or less in gushes through the funnel which is better not inverted. This will almost immediately be followed by a great increase of fæcal material and the irrigation is continued until the fæcal material begins to disappear. The fluid is then changed to bicarbonate solution and the irrigation continued until the return is clear, when two pints of solution is run in and four ounces of purgative and the tube withdrawn. Colon lavage is repeated in five or six hours, and will invariably bring away an enormous increase of fæcal matter, the result of the purgative given by mouth. In a few cases colon lavage is only required once, as the patient has recovered, but it will generally be better to repeat it. After the second wash out the bowels are likely to continue spontaneous action, and this should be looked for. In cases of profound coma or persistent fits colon lavage is repeated three and four times if spontaneous bowel action is not established and maintained.

Purgation.—The administration of purgatives is carried out by tube and continued after bowel action has begun. When the patient can drink, a purgative is given six or eight hourly until the evidence of toxæmia has completely disappeared.

Ingestion of Water.—Water to drink is given freely, from one or two ounces at first until six or eight pints or more are drunk in the 24 hours. Nothing but water is given until all the toxæmic symptoms are cleared up (except the albumin in the urine, which may be permanent); the secretion of urine must be copious before any sort of food is given. Invariably marked diuresis up to 150 to 250 oz. in 24 hours occurs from two to five days after recovery from eclampsia.

Poultices to the Loins.—The secretion of urine from the onset of fits is generally suppressed. If the small quantity usually found in the bladder is hæmorrhagic, if coma develops early, or fits persist over six hours, large linseed poultices are applied all over the back and continued until the secretion of urine is re-established to at least 40 oz. in 24 hours.

Submammary Infusions.—In cases with little or no œdema, bloody urine, vomiting, or profound coma without many fits, submammary infusion of bicarbonate solution is adopted. Forty ounces of fluid are run under the breasts at the time of the second colon lavage and may be repeated in six to twelve hours.

Morphia.—During the last two years I have ceased giving morphia. When a patient comes into labour and the coma is light there may be considerable restlessness and control may be difficult; a quarter grain of morphia then does good.

Other Medication.—When cyanosis is present oxygen is indicated and the heart requires watching as the cyanosis is usually due to cardiac debility more than pulmonary inefficiency. Strychnine and digatilin are thus indicated.

Termination of Labour.—When a case is in labour the advance is noted by palpating through the perineum, and when the head is felt in the vagina, if delivery is not rapidly spontaneous, forceps are applied. The patient should be kept in the lateral position even in the third stage. Bleeding during the third stage should be treated as in a normal case. There is always risk of progressive or recurrent heart failure during the 12 to 24 hours after delivery.

Remarks.

During the past three years I have treated 40 cases of eclampsia, with four deaths. Two of these were, I am convinced, avoidable and due to accidental suffocation, the other two were due to cardiac failure, one setting in 26 hours after the last fit and 7 hours after delivery, the other dying undelivered six hours after the cessation of fits and when the coma was apparently becoming less profound. Comparing these figures with those resulting from other methods I am convinced that the method of treatment adopted at the Rotunda Hospital is the most satisfactory now at our disposal.

GIBBON FITZGIBBON, M.D., F.R.C.P.Irel.,
Master, Rotunda Hospital, Dublin.

Special Articles.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Reorganisation of Federal Health Administration.

A PLAN for the better coördination of the health activities of the Federal Government has been submitted by the Presidential physician, Brig.-Gen. C. E. Sawyer. A new department is suggested with the title "Department of Education, Health and Welfare" under the control of a cabinet officer, to change with the administration. It is presumed that his chief assistant will also hold temporary office. The various bureaus of the departments are, in this scheme, to be controlled by permanent civil servants. The health services of the army and navy excepted, all the various agencies of the federal government for health, education, and social service and the care of ex-soldiers are to be transferred to the new department intact, each with its allotted personnel and budget. An idea of the size of this projected department can be gained when it is stated that the Veterans' Bureau alone expends more than four hundred million dollars a year, and that it is charged with an army twice as big as the standing army of the United States. In the meantime the Postmaster-General has arranged with the U.S. Public Health Service that all postal servants shall be given free vaccination against small-pox, typhoid, or paratyphoid fever at any of the stations of this service throughout the country. The postal servants are also entitled to free medical examination.

Rural Health Centres.

In New York the State Health Department is again pressing for legislation that will establish rural health centres throughout the State. The Bill is sure to meet with severe opposition, although the centres would be a great boon to rural communities and an extremely valuable example to this and other countries. Recently the death from diphtheria of a man aged 39 was reported to the State Department. The attending physician, although he saw the case on the date of the first symptoms, ten days before death, refused to give antitoxin. This physician is the only doctor within a radius of 15 miles. A similar incident, when four children died from diphtheria, occurred a month earlier. One can understand the anxiety of those, who wish to prevent such catastrophes, for an adequate rural service such as the proposed health centres would supply. So far as purely preventive work is concerned the department is able to do a good deal through travelling clinics and local campaigns. Their activities in diphtheria prophylaxis have been so successful that it is now estimated that one-half of the 64 per cent. of "non-immunes" in the school population have been protected. This should make a definite impression on the diphtheria morbidity rate.

Public Health Service.

Health education by radio is also continuing. Dr. H. M. Biggs wisely insists that only those who can speak with authority shall give official advice to the public across the ether. The list of speakers includes such well-known names as Victor C. Vaughan, of the National Research Council; Simon Flexner, of the Rockefeller Institute; Milton J. Rosenau, of Harvard; Haven Emerson, of Columbia; and G. E. A. Winslow, of Yale. From other States there comes news of progress along established public health lines and also of some rather original experiment. In South Carolina, where 725 people have had anti-rabic treatment during the past year, and three have died of rabies, it has been decided that the disease shall be attacked in the dog—not by muzzling, but by compulsory inoculation. A Bill to this end has been introduced into the State Assembly.

Influenza.

Influenza is still very prevalent, and on the authority of Surg.-Gen. Cumming this prevalence amounts to an epidemic. The epidemic, however, is less extensive than that of 1920 and the case mortality rate is low. Meanwhile Olitsky and Gates have shown the presence of antibodies, apparently specific for *B. pneumosintes*, in the blood of convalescents. An agglutinin was found to persist in the blood as long as five months after the attack. Doubtless by next year we shall have a pneumosintes vaccine.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Vaccination in Madras Presidency.

THE decline in the success rate of vaccination operations has been under the consideration of the King Institute staff for the last three years, and a report from Major J. Cunningham, I.M.S., director of the Institute, recently issued as part of a Government order, covers this period, and gives a review of the relative values of lanoline and untreated glycerine lymph in the Madras Presidency. The evidence in favour of glycerinated lymph as opposed to lanoline lymph is overwhelming; vaccinators are constantly demanding glycerine lymph in preference to lanoline. The Government review of the report gives clear indications of the steps which led up to this decision—a decision which will, no doubt, receive considerable opposition from some quarters—but before quoting the Government order it will be of advantage to give the following recommendations made as a result of the investigation:—

1. That untreated glycerine lymph be substituted for lanoline lymph as the routine vaccine lymph for the Madras Presidency as soon as the King Institute is in a position to prepare the total quantity of glycerine lymph required.
2. That the Director be empowered to make the necessary changes and obtain the extra apparatus required for this purpose.
3. That the question of a seed depôt to be situated in the hills be left over for the present until further experience of Nejland's method has been gained.
4. That, as the cessation of routine vaccination during the hot season appears to be beneficial, the present orders on that subject should remain in force.
5. That experimentation should be continued with a view to determining the best methods of removing extraneous organisms from glycerine lymph without destroying the potency of the lymph.

In his report on the vaccine section of the King Institute for 1918–19, Major Cunningham considered three factors:—

1. Adverse climatic conditions: Examination of the monthly returns of vaccination proved that the hot months are most unfavourable for vaccination.
2. The influence on the returns of a greater stringency in the examination and verification of cases, consequent on the reorganisation of vaccine operations introduced in July, 1917. Comparison of district vaccination returns disclosed the fact that the success rate in these districts which showed best results in the previous year dropped in 1918–19 almost automatically under a stricter system of verification, the only possible inference being that the results obtained in previous years had been dishonestly inflated.
3. The possibility of changes in the potency of the lymph: From an examination of this factor, Major Cunningham concluded that variations in the success rate must be due to adverse factors operating after the lymph had been despatched to its destination.

Late in 1919 Major Cunningham visited the vaccine institutes at Belgaum and Lahore in order to study more recent methods of lymph manufacture and purification. The resulting report laid stress on the extreme susceptibility of the vaccine virus to heat, and pointed out that the relatively high temperatures prevailing in the Madras Presidency for a considerable portion of the year greatly increased the difficulties experienced in producing a lymph which would retain its potency during transit to the districts. Major Cunningham also pointed out that excessive heat, such as that experienced during the hot season,

prevented a good growth on the calf, and caused rapid deterioration and destruction of the seed lymph. He drew attention to the deterioration of lymph on keeping except at very low temperatures, the ideal to be aimed at being to issue and use the lymph immediately after manufacture. The lack of success with the Madras lymph was undoubtedly due in part to the destruction of the vaccine virus by the action of extraneous organisms which were not removed in the process of manufacture of lanoline lymph, the standard preparation issued by the King Institute. Three main recommendations were the outcome of Major Cunningham's deputation, namely :—

1. That a thorough trial with glycerine lymph sterilised by the chloroform method be made in the Madras Presidency.
2. That a seed depôt should be established on the hills or in some climate more favourable than Madras.
3. That routine vaccination in the hot weather be discontinued.

In the report on the vaccine section for 1919–20 Dr. Kesava Pai pointed out that the efficacy of vaccine lymph and the percentage of success varied inversely as the period of storage, and recommended that chloroformed glycerinated lymph should be substituted for the lanoline paste—at that time the standard preparation—but the pulp for the glycerine lymph issued was manufactured in July and August, two of the worst months of the year, with the result that the case success rate fell to 42·2 and the insertion success rate to 27·5. Major Cunningham then advised that routine vaccination be discontinued during the hot weather and, after consultation with the Public Health Department, the proposal was sanctioned. Having heard of a new method, introduced by Dr. Nejland, of the Java Medical Service, for rejuvenating and retaining the potency of vaccine lymph by passing it in turn through three different series of vaccinifer, the rabbit being used to produce lymph for the cow calf, and the cow calf to provide lymph for the inoculation of buffaloes, Major Cunningham experimented on these lines, and has been able for the first time in the history of the Institute to get good results with the buffalo, and retain the potency of the seed through the cold season. The present report presents a convincing array of facts to demonstrate the superiority, under the conditions prevailing in the Madras Presidency, of untreated glycerine lymph to lanoline lymph, alike in the success rate and insertion success rate, in the size and type of the vesicles produced, and in keeping properties. The conclusions are based on the results of over 632,000 vaccinations, of which 559,659 were vaccinated with lanoline and 72,719 with untreated glycerine lymph, and may be judged by the fact that the case and insertion success rates obtained with the latter exceeded those of the former by 13·5 per cent. and 27·8 per cent. respectively. Appended to the report are a number of tables of statistics, a series of graphs illustrating different points raised in the body of the report, and finally a number of photographs of the types of vesicle produced in children and in calves by the two varieties of lymph. It is obvious that the glycerine lymph diluted to 1 in 1500 gives better results than the lanoline lymph diluted only to 1 in 500. The report will probably be accepted as a distinct advance in our knowledge of small-pox vaccine.

Child Welfare in Madras City.

At a recent meeting of the Madras Corporation the municipal child welfare work was subjected to severe criticism by a medical municipal councillor, who alleged grave defects in the working of the scheme. The midwives, he said, were inefficient and inexperienced owing to indifferent training; he therefore opposed the opening of another centre in Georgetown. Another medical councillor took the opposite view and said that if the midwives were inefficient the fact condemned the training given at the maternity hospital and not the midwives, who were undoubtedly better than the barber women. After considerable discussion the original proposition to appoint a lady doctor to supervise Georgetown centre was adopted. In connexion with the expansion of this work a successful child welfare exhibition was recently held in Madras city.

Madras, Feb. 29th.

CZECHO-SLOVAKIA.

(FROM OUR OWN CORRESPONDENT.)

Heliotherapy in Tuberculosis.

THE sanatorium for the treatment of tuberculosis in Prosecnice, which was recently opened by "Humanitas," a workmen's association, contains two novelties in sanatorium practice in this country. A clinico-climatological observatory has been installed under the direction of Dr. V. Skalák, superintendent of the sanatorium, and Dr. A. Mrkos, consultant meteorologist of the Ministry of Public Works; this observatory is especially equipped for research into sunlight and its effect on the human organism. Heliotherapy and open-air treatment are modified according to the recorded observations. Occupational therapy has also been introduced, as the patients come largely from the working class. A great improvement of discipline followed when the patients were employed in the house and on the premises. Later, patients helped in the garden and began to issue a sanatorium magazine. In view of the success of the experiment it is intended to introduce occupational therapy into other tuberculosis institutions. The Masaryk Anti-Tuberculosis League is planning to create a committee on occupational therapy and after-care of sanatorium ex-patients.

Government Public Health Lectures.

The Ministry of Health and Physical Education has started regular courses of lectures for its officials, to be held twice a year for four months, and occupying four hours a week. Attendance at these lectures is not obligatory, but the interest which is being shown in them exceeds expectations. In the spring course, series of lectures are given dealing with international public health movements, physical education in different countries, methods of public health education, new developments in sanitary engineering, &c. The intention of the Ministry is to keep officials in touch with public health progress and to prevent them from becoming merely administrative officers with no scientific interest.

Public Health in Carpathian Russia.

The Czecho-Slovak Red Cross has adopted an extended programme for public health work in Carpathian Russia, an autonomous territory connected by the terms of the peace treaty with the Czecho-Slovak Republic. The country is largely inhabited by Ruthenians, Slav people living between the Slovaks and Russians. The territory was formerly Hungarian crown land, and the local population was very much neglected. The recent world war raged near this territory and partly within its boundaries, greatly contributing to the poverty of the inhabitants. The Czecho-Slovak Republic had first to fight against severe diseases endemic in this part of Europe; after two years' work small-pox and typhus were stamped out. The political changes have greatly modified the economic situation of this territory; when the land was largely in the hands of rich owners the inhabitants of the mountainous parts were compelled to seek summer work in districts which now belong to Hungary. The American Relief Administration and Lady Muriel Paget's English mission fed the Ruthenian children for some time, but the three years' independence of the Czecho-Slovak Republic brought order and some prosperity into Carpathian Russia, and the foreign missions left the country. Last autumn, however, the Republic passed through an industrial crisis, and again there was privation in Carpathian Russia; the Red Cross recently summoned a mass meeting in Prague, to explain the situation, with the result that public kitchens were opened in the

necessitous areas, and many Ruthenian children were taken into Czech families to be cared for. Meanwhile, the Government's general economic and educational programme is proceeding, and the time is probably not far distant when the Ruthenian people, which was nearing partial extinction, will be entirely self-supporting.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Present Position of the Austrian "Krankenkassen."

AT a recent meeting of the Medical Organisation of Vienna, Dr. Stritzko, President, reported the results of his recent investigation into the present position of the Krankenkassen (sickness insurance clubs) throughout the country, and into the attitude of the medical profession towards them. Membership of one of these clubs is compulsory for a large proportion of the population; the Insurance Act of 1888 provided that all employees of private firms must insure in this manner. The principal clubs are the Workmen's, the Apprentices', the Commercial, and the District Krankenkassen; there are numerous smaller organisations, but they have lately tended to become merged in the larger ones, with advantage to both parties. Domestic servants and farm labourers are also compelled to belong to a club. The medical profession in Austria have long endeavoured to modify the principle of compulsory membership, chiefly with a view to excluding the recipients of higher salaries and wages. Their efforts have hitherto been unsuccessful, for the administration of the Krankenkassen is largely an affair of politics; the leaders of political parties have seats on the directing boards, or control the latter from outside. At present the influence of the Social Democrats is predominant in nearly all the clubs; this fact led to the formation of the Medical Organisation, which, comprising 98 per cent. of the medical men in the country, was in a position to negotiate on an equal footing with any political party. When, after the war, economic conditions rendered it necessary for all State and municipal officials to be insured against sickness, the Medical Organisation carried the arrangements through in a manner satisfactory to all concerned. The organisation has established the principle of free choice of medical attendant from the list of those who have agreed to the conditions drawn up between the organisation and any particular institution; payment is according to work done, and the tariff of charges is regulated according to the fluctuations of the rate of exchange (which has now been stable for three months). The older Krankenkassen, however, adhere to fixed salaries for their medical officers; under the principle of free choice the officers of the newer associations are able to earn considerably more. Moreover, the number of persons who can be attended in private practice is undergoing a steady reduction; approximately 60 per cent. of the entire population is now insured. Of the remaining 40 per cent. the wealthier half patronise specialists only. The older Krankenkassen suffer from lack of funds and have to be assisted by the State; the fees in private practice cannot be raised, and many authorities are agreed that Austria is drifting towards "socialisation" of the medical profession—that is to say, national insurance, with no more possibility of private general practice.

Suicides in Vienna, 1922.

The annual number of suicides in Vienna, which in 1913 had reached the figure of 1534, showed a fall during the war to below 700 (1917), but rose again rapidly after peace was declared, being 1209 in 1920. In 1921 it fell slightly but rose again to 1189 last year (570 males, 619 females). Sixty per cent. of males who attempted suicide were successful, but only 27 per cent. of females. The oldest victim was a woman, aged 82 (death by poison), the youngest a 10-year-old girl, who hanged herself. Poverty and financial straits were responsible in only a few cases; disappointment in love, family troubles, fear of punishment, or disease, are more often the cause of suicide. Male suicides prefer what might be termed "active" means—rope, revolver, or railway engine; females more often employ gas, or seek death by drowning or by throwing themselves from a height. Poison is used by equal numbers of both sexes. Seasonal analysis shows that fewest suicides occur in the autumn; May and June contain about 30 per cent. of the total number.

March 15th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. J. P. H. Greenhalgh is placed on retd. list at his own request.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. R. F. Ellery retires on retd. pay.

Maj. and Bt. Lt.-Col. C. W. Holden relinquishes the temp. rank of Lt.-Col. on ceasing to be empld. as Asst. Dir. of Hygiene.

REGULAR ARMY RESERVE OF OFFICERS.

Maj.-Gen. H. Carr, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated: Lt.-Cols. W. K. Clayton, J. MacK. Harrison, C. J. Deyns, and E. J. Lawless; Majs. J. Hamilton, R. Y. Anderson, and J. Bruce (granted the rank of Lt.-Col.); Capts. R. W. C. Macdonald, G. L. Findlay (granted the rank of Maj.), J. W. A. Cooper, B. M. Young, A. W. W. Hayles, M. Scales, G. S. Thompson, S. Child, H. J. Blackler, G. A. Auden, A. G. Hendley (granted the rank of Lt.-Col.), J. C. S. Dunn, H. G. Magrath (granted the rank of Maj.), A. Rodger (granted the rank of Maj.), C. Webb, S. F. H. Everill, J. W. McIntosh (granted the rank of Maj.), T. W. S. Paterson (granted the rank of Maj.), and A. Mowat (granted the rank of Maj.).

General Hospitals: The undermentioned officers relinquish their commns. and retain their rank, except where otherwise stated: Lt.-Cols. T. Beattie and T. Gowans (Bt. Col.) (retains his rank); Maj. A. Parkin; Capts. M. A. Cassidy, G. A. Ewart, and C. Gouldesbrough.

The undermentioned, having attained the age limit, are retired and retain their rank, except where otherwise stated: Lt.-Cols. Sir R. W. Philip, Sir J. M. Cotterill, Sir T. K. Dalziel, C. W. Cathcart, F. M. Caird, R. Muir, and R. Stockman; Majs. Sir D. Wallace (Bt. Lt.-Col.), Sir G. A. Berry, Sir J. W. B. Hodsdon, H. Rutherfurd, D. Macartney, W. K. Hunter, G. L. Gulland, J. J. G. Brown, J. W. Downie, and A. M. Ramsay; Capts. A. A. S. Skirving (granted the rank of Maj.), R. A. Fleming (granted the rank of Maj.), E. Matthew, J. W. Dowden, E. W. S. Carmichael, D. C. Watson, A. Miles, A. L. Turner, J. Miller, H. G. Langwill, E. Bramwell, J. G. Cattanach, G. L. Chiene, and W. Guy (Bt. Maj.).

TERRITORIAL ARMY RESERVE.

Maj. C. W. Edwards, having attained the age limit, is retired and is granted the rank of Lt.-Col.

ROYAL AIR FORCE.

B. F. Haythornthwaite is granted a short service commission as a Flight Lt.

CHELSEA HOSPITAL FOR WOMEN: COMPLETION OF REBUILDING SCHEME.—Rather more than £30,000 are required for building and equipping a home for the servants and nurses, who are at present occupying half the wards in the hospital. This home was part of the original rebuilding scheme, and there is ample room for it in the grounds. Detailed plans are now being prepared by the architects, Messrs. F. H. Greenaway and J. E. Newberry, and it is hoped that the work, which is considered urgent by the King Edward's Fund, may be begun this summer. As soon as completed some 45 more patients will be received into the hospital, and it will be possible to arrange that some of these shall be of rather better means though unable to pay the high charges of nursing homes. A sum of £13,500 is still required.

Correspondence.

"Audi alteram partem."

L'AFFAIRE SPAHLINGER.

To the Editor of THE LANCET.

SIR,—I have read with great interest the correspondence which has appeared in your columns concerning Mr. Henry Spahlinger and his work, and I am taking this opportunity of briefly reporting four interesting cases, which have either been treated by me by Spahlinger's method, or been under my direct observation, during the past two years.

CASE 1.—A young man, aged 26, who was wounded in November, 1920, a bullet entering the right side of the chest at the base and passing across, the exit wound being on the left base; the rib was fractured on the left side. Tuberculosis was diagnosed at the end of December, 1920, and the patient invalided. He came under my observation at the beginning of 1921, and the condition at that time was exceedingly bad. He was thin; had considerable scattered disease in his chest, especially at the base of the left lung where there were many moist wounds; was spitting up a great deal of greenish-yellow sputum, containing large numbers of tubercle bacilli; was febrile, the temperature being generally slightly raised at night, and at frequent periods he would get a severe auto-inoculation, even though resting, the temperature rising to considerable heights and all the signs and symptoms being aggravated. Also his pulse was rapid, he was having night-sweats, and considerable digestive disturbance. He continued to go steadily "downhill" until August, 1922, when he commenced Spahlinger's partial serum treatment, taking the material both by the mouth and by intramuscular injections. This patient gradually improved. I saw him a few days ago, and the condition, as far as one could judge, was that of complete arrest of the disease; he had regained his general condition and weight, his temperature was normal, the sputum had almost disappeared, the pulse was slow, and the digestion was right again.

CASE 2.—A man, aged 28, who came under my observation about a year ago, with severe active spreading disease of the upper lobe of the right lung, and with a dry pleurisy at the base of this lung. He was thin, pale, febrile, had a rapid pulse, and much sputum containing numbers of tubercle bacilli; he was also getting constant night-sweats, the digestion was impaired, and he had no appetite. This patient was put on the ordinary routine at Montana, but did not improve until about six months ago, when Spahlinger's partial serum treatment was commenced. The patient began to improve, and at the present time the disease appears to be arrested; he has gained two stones in weight, the cough and sputum have practically ceased, the temperature is never raised even on almost normal exercise, and the digestion, appetite, and cardiac condition are all excellent.

CASE 3.—A young man, aged 22, tall, thin, and afflicted with tuberculosis of both kidneys of five years' standing. There is no doubt whatever about the diagnosis, as it has been confirmed by cystoscopic examination and catheterisation of both ureters. The symptoms consisted of frequent attacks of kidney pain, chiefly on the left side, and the passage of urine containing a large quantity of pus, in which tubercle bacilli have been found on several occasions. There was never any fever, but patient's condition was poor. A year ago he started the Spahlinger treatment, with surgical serum No. 5, injections of 2 c.cm. twice per week. About the same time he also began a course of sun-bathing, and has taken from time to time urotropin. During the past year he has made very great improvement; the kidney pains and sensations have almost ceased to appear, he has gained weight and strength in every way, and the urine is much freer from pus than formerly. The patient himself is a very firm believer in the efficacy of the Spahlinger injections, and attributes his return to comparative health to these. He is very anxious to begin another course as soon as material is available.

CASE 4.—Woman aged 27. In October, 1919, she first contracted tuberculosis, which was brought to light by a fairly large hæmoptysis. She had recently had a cough and lost a good deal of weight. She became worse, and developed the classical signs of active pulmonary tuberculosis—i.e., fever, tachycardia, night-sweats, cough, sputum, loss of appetite, and dyspnœa on exertion. In addition to this she developed pain in the pelvis, and tuberculosis of the ovaries and tubes was diagnosed; subsequently the appendix and left ovary were removed. The physical signs in the chest were infiltration of both apices, and pleurisy at the left base. She went to a sanatorium, but did no good. In October, 1921, Spahlinger's partial serum treatment was commenced, and from this day the patient slowly began to improve. She came under my direct notice in January, 1922, and at this time the physical signs in the chest were slight, quite dry, and not easy to elicit; the general condition was good, the temperature normal, and there was no cough or sputum. I have since seen this patient, and she is still improving in general health.

I quote these cases from among a number of others as being especially striking in that none of them was improving under ordinary treatment, and it was only when the Spahlinger injections were commenced that definite recovery began.

I am, Sir, yours faithfully,

BERNARD HUDSON.

Montana, Valais, Switzerland, March 22nd, 1923.

THE SURGICAL TREATMENT OF SEPTIC MENINGITIS.

To the Editor of THE LANCET.

SIR,—I agree with Sir William Milligan in his letter in your issue of March 17th that Mr. H. L. Martyn's communication challenges criticism by those engaged in aural surgical practice. I am convinced that Mr. Martyn's case comes under the category of serous as distinguished from septic meningitis. When it is remembered that the death-rate of serous meningitis is not more than 5 per cent., while that of septic meningitis is at least 95 per cent., the necessity for clearly differentiating between the two is obvious.

The first 25 years of my experience in hospital and private surgical work would have led me to agree with Sir William Milligan when he gloomily says that operation, or no operation, the treatment of septic meningitis, following septic middle-ear disease, is almost invariably unsuccessful, and fatal results ensue. My last five years' work, however, have led me to the much happier conclusion that by improved methods the treatment of septic meningitis is by no means to be despaired of. Success essentially depends upon the employment of active in contrast with passive drainage. I have had in all four cases under my special method of which three recovered. The fourth was fatal, as in my opinion the treatment was delayed too long.

My impression is that there are far more fatalities due to septic meningitis than are recorded. Mastoid operations are performed in a dirty field. I visited during one afternoon three different theatres in London where radical mastoid operations were being performed, and in each case the ear was full of purulent material, much of which was certain to be re-spread on the deeper parts as those became exposed during the operation. The only effective way to clear and prepare the ear for operation is by suction.

My experience is that if proper methods of cleanliness are adopted for a month on even the most septic ear, the necessity for more than half the radical mastoid operations now done will disappear. The measures that I advocate consist of active, positive, suction drainage as distinguished from passive, negative drainage by gauze strips and tubes. Should the necessity arise, the brain can be decompressed at the roof inner wall and posterior wall of the antrum and tympanum, and active suction drainage applied in these positions by means of specially constructed small bell-shaped suckers.

I am, Sir, yours faithfully,

WM. STUART-LOW.

Wimpole-street, W., March 22nd, 1923.

THE TRANSMISSION OF LEPROSY INFECTION.

To the Editor of THE LANCET.

SIR,—In the course of my Chadwick lectures on the Evolution of Epidemics in April, 1913, I said: "The enormous numbers of leprosy bacilli which are found in

the skin of leprous patients suggests the possibility of transmission in some cases by biting insects." [1] This suggestion was fortified in the following year by experiments published by Honeij and Parker.[2] Sir Leonard Rogers, in his lecture on the Leprosy Problem,[3] has now made the same suggestion in explaining the general relationship between heavy rainfall and high leprosy incidence in hot moist tropical and subtropical districts. Among other conditions favouring infection, Sir Leonard Rogers mentioned a low stage of civilisation and hygiene, which agrees again with the statement I made in the same lecture, that "since the renal and intestinal excreta are crowded with bacilli which thus are carried without the body it is easy to realise that insanitation may play an important part." [1]

I venture to think that these two methods of the conveyance of infection from the leprous to the healthy will be found to cover most of the cases. Insanitation conveying bacilli from urine and fæces includes not only defective methods of disposing of excreta, but neglect on the part of those leprous persons who prepare food, to wash the hands after urination or defæcation. Naturally, it would only be among people who have no fear of lepers that leprous persons would be permitted to have anything to do with the preparation of food for others.

I am, Sir, yours faithfully,

J. T. C. NASH,

Medical Officer of Health, County of Norfolk.

March 24th, 1923.

HILUM TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—It is with pleasure that an opportunity is given of reading that some radiographers raise a note of warning against the diagnosis of hilum tuberculosis, as is done in the paper by Dr. Bernard Hudson and Mr. Percy Sutton in your issue of March 17th. Since there appears to be a degree of confusion in the minds of some clinicians regarding the nature of the objections raised by morbid anatomists against belief in the existence of hilum tuberculosis, perhaps you will allow me, Sir, to express my own confession of faith.

In the first place, no one can doubt that in young children a caseating tuberculosis of bronchial glands may result in acute or in subacute tuberculous infection of the lung. In the great majority of cases death quickly follows. In three instances, however, I have seen a calcareous mass in the lung of a child in proximity to the root, showing that even this form of tuberculosis may become quiescent. While this appears to be the case I have never seen tuberculous fibrosis originating in the root of the lung either in children or adults. Occasionally in children caseous glands may act like any other course of obstruction of a bronchus and lead to dilatation of divisions of bronchial tubes, associated with which may be a varying degree of fibrosis, but such a condition is a non-tuberculous fibrosis. It follows mechanical obstruction, and has no direct connexion with tuberculous infection.

As regards hilum tuberculosis in the adult, I do not believe that it exists, except possibly by what one may call an accident, such as one may describe tuberculosis almost, if not quite, limited to one lower lobe of a lung. I have seen three such cases, but never tuberculosis of the lung in the adult originating at the root of the lung. The idea that hilum tuberculosis exists, it seems to me, has arisen by associating a misinterpretation of shadows cast by normal structures with the knowledge that in young children a form of tuberculosis of the lung may extend from the hilus. The post-mortem room, I maintain, does not support this mental conclusion.

I am, Sir, yours faithfully,

THEODORE FISHER.

Thorpe St. Andrew, Norwich, March 21st, 1923.

[1] J. T. C. Nash: Evolution and Disease. London: Simpkin and Co., Ltd; Bristol: John Wright and Sons, Ltd.
[2] Jour. of Med. Research, 1914, xxx., 127.
[3] THE LANCET, March 24th, 1923 (p. 628).

DENTAL BOARD LECTURES.

To the Editor of THE LANCET.

SIR,—In response to numerous requests the Dental Board has decided to publish in one volume the following lectures on the Diseases of the Periodontal Tissues due to Infection in their Relation to Toxæmia. (1) The Patho-Histology, by Mr. J. Howard Mummery; (2) The Local Clinical Symptoms, by Mr. J. G. Turner; (3) The Bacteriology, by Prof. E. E. Glynn; (4) The Systemic Effects, by Sir William Willcox. These lectures involve a considerable amount of original observation and research by the lecturers, and will be suitably illustrated by copies of the slides exhibited on the epidiascope, some of which will be coloured. The volume will be bound in cloth, and the price per copy will be 2*s.* 6*d.* post free. Only a limited number will be printed, and orders, accompanied by the remittance, should be sent to the Registrar, the Dental Board of the United Kingdom, 44, Hallam-street, London, W. 1, without delay.

I am, Sir, yours faithfully,

GEO. P. BLIZARD,

March 23rd, 1923. Assistant Registrar.

THE LAWS OF THERAPEUTIC IMMUNISATION.

To the Editor of THE LANCET.

SIR,—Without decrying the truly exquisite fabric of Sir Almroth Wright's [1] research itself, it seems to me that in some vital points the St. Mary's code runs contrary to clinical experience. It is surely hardly legitimate to generalise upon a few experiments performed with serophytic organisms alone and on strength of these have us reject the autogenous vaccine for the stock. The fallacy of this is at once apparent if we consider the strains of *Bacillus coli* which run into some hundreds in point of numbers. A stock vaccine would presumably contain examples of each in adequate concentration. Its composition would be an achievement even for St. Mary's. Its dosage would be colossal to be in the least effective. In other words, the coli stock vaccine is useless.

But apart from this, the autogenous vaccine has been clinically established for many years as always and generally the vastly superior, and if, as one is forced to believe, the protagonists of the stock vaccine theory discount clinical evidence as much inferior to laboratory deductions (as in the preface to the last edition of the "Teat and Capillary Glass Tube") then, indeed, Sir, I submit the cart is before the horse. Over and over again the fallacy of ignoring the clinical side and being over-scientific has been shown to be an evil legacy of Victorian days and to be a danger to be most closely guarded against. The recent discussion upon renal and hepatic efficiency tests shows only too clearly the limitations of scientific methods per se. Neither must it be forgotten that Sir Almroth Wright has not yet proved or disproved anything at all as to the value of autogenous vaccines. He examples serophytic infections, which certainly are often amenable to stock vaccines, at any rate, the streptococci. The whole gamut is not thereby sufficiently exhausted to permit of generalisations of so far-reaching and dramatic a kind as our mentors would desire.

Sir Almroth Wright was countered twice (in advance) by Sir Clifford Allbutt when he described in my book a case of septicæmia cured by an autogenous vaccine. The case is described in detail. Dr. Crofton also adds counter evidence to other vital points. The new St. Mary's code should be recast nearer to clinical experience. The most important point in which it errs is the suggestion that a stock vaccine is superior to an autogenous one. This has been proved clinically on hundreds of occasions to be entirely untrue.

I am, Sir, yours faithfully,

A. GEOFFREY SHERA.

Clinical Laboratory, Princess Alice Memorial Hospital, Eastbourne, March 24th, 1923.

[1] THE LANCET, Feb. 24th, March 3rd and 10th, 1923.

Obituary.

PROF. CARL ARND.

Dr. Carl Arnd, who died suddenly of heart failure on March 8th, was professor of general surgery in the University of Berne and one of the best-known and most highly respected surgeons in Switzerland. He was born on June 14th, 1865, in Petrograd, the son of a Swiss merchant there, and was educated at Berne where he studied medicine. He received his surgical training under Prof. Kocher in the University Surgical Clinic. In 1902 he became tutor in surgery, and in 1904 succeeded Prof. Girard as chief of one of the non-clinical surgical sections of the Insel-Spital in Berne. In 1909 he received the title of professor and in 1919 he became prof. extraord. for general surgery. Prof. Arnd's numerous writings dealt chiefly with surgical technique, the treatment of surgical tuberculosis, and orthopædic matters. For years he had been a member of the Swiss, of the German, and of the International Society of Surgery, and lately a member of the Swiss National Committee of the latter. Arnd was an able and careful operator and possessed a wide knowledge in all surgical matters combined with excellent general culture especially in the literature of his subject, for he was a good linguist. In addition he was a sagacious man of high natural gifts, a good teacher, and an eloquent speaker. His modesty was apt to prevent him from taking the position to which his intellectual equipment entitled him. He possessed great driving force and employed this, apart from his routine work, in the fight against surgical tuberculosis and cancer. For his friends and colleagues his death is a great loss.

THOMAS ALEXANDER MURRAY, L.R.C.P.IREL.

MEDICAL OFFICER OF HEALTH, WARRINGTON R.D.

Dr. T. A. Murray, of Penketh, Warrington, who died suddenly on March 21st, in his 62nd year, received his education at Manchester Grammar School, and studied medicine at Owens College and Manchester Royal Infirmary. He qualified L.R.C.P. Ireland in 1887, and began private practice at Penketh two years later. He was for many years a member, and for some time chairman, of the Warrington Rural District Council, to which authority he later became medical officer of health. During the war Dr. Murray was a medical officer at the Lord Derby War Hospital, and served as commandant of the special constables in the Penketh district. For some years he was secretary of the Warrington Panel Committee. Among other appointments he held those of chairman of the Pensions Board, member of the National Service Medical Board, medical officer to the Cheshire Lines Committee, and police surgeon for the Sankey area. In 1889 Dr. Murray married Miss Alice Gilbert, of Nantwich. His widow and two daughters survive him.

A friend writes as follows: "Dr. Murray was held in the highest regard by the members of the medical profession in Warrington and district. His essential fairness of mind, even temper, and good nature made him an admirable local secretary of the British Medical Association. His wide experience of public affairs, readily placed at the disposal of his colleagues, both those in practice and those holding official posts, made for satisfactory dealing with contentious matters which might otherwise have engendered undue difference of opinion."

Public Health Services.

THE FIRST ANNUAL HEALTH REPORT FOR 1922.

Dr. A. T. Nankivell is to be congratulated on the prompt appearance of his report for 1922. The borough of Hornsey is, he tells us, very largely a "dormitory town," consisting generally of good house property. There are no slum areas, but many houses built for the use of one family are now occupied by two or more families for whom the sanitary and cooking accommodation is not satisfactory. There are 12,000 more women than men in the borough, the excess being chiefly domestic servants. Up to the age of 15 the sexes are equally balanced, but between the ages of 25 and 35 there are over 50 per cent. more women than men.

Some of the principal statistics for 1922 were: Estimated population, 88,007; birth-rate, 15·5; death-rates per 1000 of the population from all causes, 11·2; from tuberculosis, 0·8; from cancer 1·6; from respiratory diseases and influenza, 2·2. Death-rates per 1000 births—infant mortality, 52; diarrhœa, &c., under 2 years, 2·2; maternal mortality from child-birth, 3·7. Of the 72 deaths of infants, 41 occurred in the first month of life. Dr. Nankivell submits a chart which shows that the infant mortality has been reduced by one-half since 1900, but that the infant deaths attributed to ante-natal causes have remained stationary, and he expresses the opinion that more ante-natal work is needed at the centres.

No cases of small-pox occurred in the borough. The menace of small-pox led to the circulation of a leaflet on the value of vaccination and the population is now better protected than it was. Hornsey now has the right to use 10 beds in the Uxbridge Joint Small-pox Hospital. A small school outbreak of diphtheria was satisfactorily checked by "swabbing" the class and isolating a carrier. One child, out of ten notified, lost its sight from ophthalmia neonatorum. Now that scarlet fever is so mild Dr. Nankivell is inclined to favour the use of the isolation hospital beds for diseases of a more fatal character.

The school report records no new schemes. Dr. Nankivell thinks just as the child welfare records are passed on to the school, so both child welfare and school records might be usefully passed on to the panel practitioner. Unfortunately, unless the child goes to a secondary school there is a regrettable gap of two years when the adolescent is without medical supervision. Dr. Nankivell notes no malnutrition among the school-children from insufficiency of food, but a certain amount due to improper food, such as sweetstuffs, pickles, and strong tea, and a further amount caused by late hours and want of rest. Milk has been given to a number of children at school with very satisfactory results, and Dr. Nankivell thinks it is better for a poorly-nourished child than malt and oil, which is apt to be taken home and shared by the whole family. Four children are operated on for adenoids and tonsils every Saturday morning at the school clinic. At the end of the year there was a waiting list of 58. Although the results were satisfactory, Dr. Nankivell would prefer these children to be kept in hospital for 48 hours after the operation.

A leaflet is issued to parents, urging the importance of making full use of the facilities for dental treatment provided for the children. Of 6600 children inspected by the dentists, no less than 4205 needed treatment, and of these 2089 actually received treatment during the year.

SUSSEX AND THE RED CROSS.—The Duchess of Norfolk, presiding at the annual meeting of the Brighton, Hove, Preston and Patcham Division of the British Red Cross Society, held at Brighton on March 21st, said that the Red Cross would always be wanted. Her ambition was that the Sussex branch should be ready for organisation in 48 hours, and the compilation of a register of every trained V.A.D. in the county would tend to that end. Awards were distributed including the Norfolk cup to Sussex 13, and a number of war-time badges, bars, and medals. The annual report of the branch chronicled work carried on at the Lady George Nevill Hospital, Hove, where patients from all parts of the county receive electrical and other treatments; 282 men were admitted during the year, there were 27,974 attendances and 47,997 treatments, and 117 remained on the books. The ambulance column carried 746 patients in the 12 months, the car mileage being 15,923.

Medical News.

UNIVERSITY OF OXFORD: *Radcliffe Travelling Fellowship.*—The trustees have elected Maurice Elgie Shaw, B.M., B.Ch., M.A., New College (and Guy's Hospital), to a Fellowship of £300 a year, for two years.

The Radcliffe Prize for 1923 has been awarded to Arthur Duncan Gardner, D.M. (University College), F.R.C.S., formerly Radcliffe Travelling Fellow in the University, for his researches in medical science.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on March 21st Prof. A. V. Hill, F.R.S., was appointed as from August 1st next to the Jodrell Chair of Physiology tenable at University College. Dr. Hill was educated at Trinity College, Cambridge, where he was Third Wrangler, and obtained a first-class in physiology in the second part of the Natural Sciences Tripos. He was Fellow of Trinity College from 1910 to 1916, and in the latter year was elected Fellow of King's College. During the war he was director of the Anti-Aircraft Experimental Section of the Munitions Inventions Department and a member of the Inventions Committee. Since 1919 he has been professor of physiology in the Victoria University of Manchester.—It was resolved to hold a reception for the Sixth Triennial Congress of the Société Internationale de Chirurgie, which will meet in London next July.

UNIVERSITY OF BIRMINGHAM: *Clinical Board.*—A course of post-graduate demonstrations will be given at the General Hospital, Birmingham, on Tuesdays from 3.30 to 5 P.M., April–June, 1923, commencing on April 17th. The course will be given by members of the medical and surgical staff, and will include demonstrations on skin diseases; nervous diseases; surgical cases; chronic arthritis and its treatment; diseases of the rectum; diseases of the heart; diseases of the nose and throat; investigation of diseases of the stomach; common deformities of the feet; diabetes; and cases illustrating the varieties of nephritis.

UNIVERSITY OF DURHAM.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR DEGREES OF BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Materia Medica, Pharmacology and Pharmacy; Public Health; Medical Jurisprudence; Pathology and Elementary Bacteriology.—Edgar F. H. Bell, Alfred H. F. Cole, Joseph Davis, William H. Denholm, Joseph F. Hedley, James Henderson, Gwendolen Jones, William G. S. Pepper, and Florence M. Smith.

THIRD EXAMINATION FOR LICENCE IN DENTAL SURGERY.

Anatomy, Physiology, and Histology, Dental Anatomy, Dental Histology and Dental Materia Medica.—Honours (Second Class): Leslie T. D. Heppell, Arthur T. Picton, and George A. Catcheside.

UNIVERSITY OF MANCHESTER.—The following resolution was passed by the University Council at its last meeting:—

"The Council have heard with deep regret of the death of Sir William Thorburn, Professor Emeritus in the University. They desire to record their sense of his great services as an administrator, a teacher and an investigator, his eminence as a surgeon and the whole-hearted devotion with which he sacrificed himself in the service of his country. His sterling integrity of character inspired respect in all his colleagues and students.

"The Council desire to convey to his relatives their profound sympathy with them in their loss."

The following appointments have been made: Lecturer in chemistry, Mr. Fred Fairbrother, M.Sc.; clinical lecturer in infectious diseases, Dr. D. S. Sutherland; honorary clinical lecturer in tuberculosis, Dr. R. W. Marsden.

At recent examinations the following candidates were successful:—

DIPLOMA IN PUBLIC HEALTH.

Part I.—Ada Furniss, R. M. Galloway, Simon Kelly, B. L. Lloyd, Hilda Pratt, Effie Ratner, and Gladys J. C. Russell.

Part II.—G. V. Ashcroft.

CERTIFICATE IN FACTORY HYGIENE.

J. W. Chadwick.

BRITISH MEDICAL ASSOCIATION: *Scholarships and Grants in Aid of Scientific Research.*—The Council of the Association is prepared to receive applications for research scholarships as follows: 1. An Ernest Hart memorial scholarship, of the value of £200 per annum, for the study of some subject in the department of State Medicine. 2. Three research scholarships, each of the value of £150 per annum, for research into some subject relating to the causation, prevention, or treatment of disease. Each scholarship is tenable for one year, commencing on Oct. 1st, 1923. A scholar may be reappointed for not more than two additional terms. A scholar may hold a junior appointment at a university, medical school, or hospital provided the duties of such appointment do not interfere with his work as a scholar. The Council is also prepared to receive applications for grants for the assistance of research into the causation, treatment, or prevention of disease. Preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine. Applications for scholarships and grants for the year 1923–24 must be made not later than Saturday, June 9th, 1923, in the prescribed form. The conditions of award are stated in the regulations, a copy of which will be supplied on application to the Medical Secretary of the Association, 429, Strand, London, W.C. 2.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION. Under the auspices of the Association, provision has been made for clinical teaching of medical practitioners during the summer months (May to October). The teaching facilities comprise (*a*) clinical courses, and (*b*) clinical assistantships. The clinical courses are arranged to suit the requirements particularly of general practitioners. A limited number of clinical assistantships are provided whereby graduates desiring opportunities for detailed study of special subjects may become attached to wards or out-patient departments, and may work under direct supervision of the physician or surgeon in charge. Intending students must enrol and pay their fees at the particular institutions concerned. Enrolment is limited to qualified medical practitioners. Further information will be supplied on application to the Secretary of the Association at the University, Glasgow.

HORSHAM HOSPITAL.—Owing in the main to the exceptionally wet winter it was not found possible to complete the erection of the new hospital at Horsham for the opening ceremony to take place in February, but it is hoped that this may take place in about five weeks' time. The total cost when completed will be nearly £15,000 for the provision of 30 beds and, including the value of the old Cottage Hospital erected in 1892, practically the whole of the money has been found, many of the donations commemorating the sacrifice of sons of Horsham in the late war. A very satisfactory state of affairs was shown at the thirty-first annual meeting of subscribers and friends on March 21st. There was a balance at the bank of £112, together with £400 on deposit; 231 cases had been admitted. The amount received from patients was £281, or £30 more than in 1921, and judging by the demands for the single ward in the old hospital there is no doubt there will be a big demand for the three private wards in the new institution, which will bring in a considerable income. With a view to raising money for the upkeep of the hospital it is proposed to adopt a voluntary contributory scheme.

ROYAL VICTORIA HOSPITAL, BELFAST.—The annual meeting of the hospital was held on March 23rd, the Lord Mayor being in the chair. The board of management stated in its report that the number of new cases seeking advice and treatment at the hospital during the past year was 30,000, or nearly 3000 more than in the previous year, while nearly 300 more cases were treated in the wards. In view of demands on the bed accommodation, caused chiefly by street casualties (which usually occurred in batches), 25 additional beds were put into wards which were capable of taking them without causing overcrowding. In this way a total of 346 beds was obtained. The daily average number of beds occupied was 318. The chairman, in proposing the adoption of the report, stated that a sum of over £52,000, or about £1000 a week, was required during the year to run the hospital. Prof. J. A. Lindsay, chairman of the board of management, seconding the motion, said that when the present hospital was opened in 1903 the population of Belfast was about 355,000; it was now probably approaching half a million. During that period of 20 years there had been very little increase of hospital accommodation in the city, so that Belfast was at present under-hospitalled to a dangerous degree. The board of management recognised its responsibility; plans for extension had now been adopted, including three new wards, giving 60 new beds, a considerable extension of the extern department, a new nursing block, with accommodation for 75 nurses, and a new mortuary. These extensions would set free much-needed accommodation for special departments. A building committee had been appointed, and the work would be begun with all possible promptitude. The estimated cost was £64,000, exclusive of equipment. These additions would involve a heavy increase in the annual expenditure, and the board appealed for a larger income. A satisfactory feature in the accounts was an increase of £1023 from pay patients. The appointment of a resident biochemist would be of much benefit to the hospital and to the medical school. Between 300 and 400 students were attending the hospital.

Dr. G. W. Paterson has been reappointed an Official Member of the Legislative Council of the Island of Grenada.

THE Memorandum as to the Duties of Doctors and Dentists under the Dangerous Drugs Act, 1920, has now been printed and may be obtained, price 2*d.*, through any bookseller or direct from H.M. Stationery Office.

ROYAL INSTITUTION.—The lectures after Easter will begin on Tuesday, April 10th, when Sir Arthur Keith will deliver the first of a course of four lectures on the Machinery of Human Evolution. On Thursday afternoons, commencing April 12th, Dr. A. O. Rankine will lecture on the Transmission of Speech by Light, and Sir William Bayliss on the Nature of Enzyme Action. The Saturday afternoon lectures will include two by Dr. Leonard Williams on the Physical and Physiological Foundations of Character, and two by Dr. Arthur Hill on the Vegetation of the Andes and the New Zealand Flora.

IRISH FREE STATE: MEDICAL SERVICE IN THE NATIONAL ARMY.—Our Dublin correspondent writes: The terms of remuneration of officers of the Medical Service of the Free State Army were announced last week. They are as follows: Lieutenant, £1 a day; captain, £1 10*s.*; commandant, £2 2*s.*; colonel, £1000 a year; colonel, while holding rank of Deputy Director of Medical Services or Chief Sanitary Officer, £250 a year extra; major-general, Director of Medical Services, £1500 a year. It is stated that the above rates will become effective on April 1st, 1923, and that the engagements of all officers under these rates are for one year only, terminating on March 31st, 1924. The army authorities are wise in making only temporary appointments, since it is not possible at present to estimate the size of the army on a peace footing. It is the hope of the profession that when permanent appointments are being made they will be made on the basis of competitive examination. The present head of the Free State Army Medical Service, Major-General Maurice R. J. Hayes, is retiring. He only accepted the post temporarily in order to organise the Service, and there is no doubt that in the eight months he has held office he has done as much as was possible to make the Service efficient and of high professional standing. The name of his successor is not yet announced.

ROYAL MEDICAL BENEVOLENT FUND.—At a recent meeting of the Committee 38 cases were considered and £489 voted to 35 applicants. The following is a summary of some of the cases relieved:—

Widow, aged 53, of L.R.C.S. Edin. who practised in Madras and died in 1912. Applicant's youngest daughter requires training (aged 20) to enable her to earn her own living and the Fund is asked to help. Applicant is at present out of a post herself but hopes to get one shortly. Voted £15 in two instalments.

Widow, aged 74, of M.R.C.S. Eng. who practised in Middlesex and died in 1903. Through age and increased infirmity applicant is unable to accept hospitality to visit friends; other houses where welcome for long visit was formerly offered are now closed through their own reduced circumstances. Applicant is crippled with rheumatism and can only get about on two sticks. Total income £68. Rent £28. Voted £26 in 12 instalments.

Daughter, aged 67, of M.D. St. And. who practised in Cambridgeshire and Hertfordshire and died in 1872. Owing to age and having a delicate sister (aged 62) unable to earn sufficient to make ends meet. Earns about £35 by teaching and a little by the sale of fruit and poultry. This case is strongly recommended by the Governesses' Benevolent Fund. Voted £18 in 12 instalments.

Daughter, aged 65, of M.R.C.S. Eng. who practised in South Wales and died in 1873. Applicant suffers from bronchitis and has not been able to work since October, 1921. Nurse by profession. Failed in 1922 to get sufficient votes for Epsom College. Only income from Nurses' Insurance Fund, 7*s.* 6*d.* per week, and occasional gifts from friends. Sisters have been helped by the Fund. Voted £18 in 12 instalments.

Widow, aged 37, of M.R.C.S. Eng. who practised in Buckinghamshire and died in 1922. Owing to the sudden death of her husband she is left with two children, ages 10 and 8½, with an income of only £100 a year. Applicant asks for help towards education. A small grant was made to make the applicant eligible for the consideration of an education grant.

Widow, aged 32, of M.R.C.S. Eng. who practised in Kent and died in 1922. Applicant's husband was ill for eight years which prevented him from working and saving. She is left with a son, aged 6, and her only income is the interest on £900. As applicant is a trained nurse she hopes to take it up again. Rent £30. A small grant was made to make the applicant eligible for the consideration of an education grant.

L.R.C.P. & S., aged 73. Applicant has been unable to obtain any locums since October, 1922, and is asking the Fund to give him a little assistance. He has a married son, aged 24, who is a market gardener, and he has to give him assistance now and again. Rent is £70 a year inclusive, and only income last year was £160 from locums, nothing since October, 1922. Voted £26 in 12 instalments.

Subscriptions may be sent to the Hon. Treasurer, Sir Charters Symonds, at 11, Chandos-street, London, W. 1.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 21ST.

Codification of Workmen's Compensation Legislation.

Mr. SEXTON moved: "That in view of the confusion due to the existence of several Acts of Parliament dealing with compensation for injury to workmen, this House is of opinion that any Bill dealing with workmen's compensation introduced by the Government should contain provisions for codifying the law." Dealing with the various anomalies which he said arose under the present law, the hon. Member remarked that the six weeks' notice was still maintained, and so was contracting out. It was a pernicious doctrine, a delusion, and a snare. The man was insured and he was compelled to undergo a medical examination. The medical referee said that he was fit for light work and the judge reduced the compensation accordingly, in many cases to 1*d.* per week. It was all donkey work in the docks, and the result was that the man failed to fulfil his obligation under the order of the court.

Mr. TILLETT, who seconded the motion, said they were anxious to force on the Government the work of codifying the law. He would not mind if they spent £1,000,000 on the lawyers, or an equal sum on the doctors. They were not there for economy so far as the doctor and the lawyer were concerned. They wanted to give both a fair and square chance and he believed that they would do justice to their professions.

Mr. BRIDGEMAN (Home Secretary) said that in the Workmen's Compensation Bill, which the Government hoped to introduce very shortly, they would be able to make some improvements. After that Bill was passed they could devote their attention to some kind of consolidation or codification of the various measures affecting this branch of legislation. He had been surprised to find that the Employers Liability Act had fallen into disuse. In 1898, the year after it came into force, the number of actions under that Act was 1879; in 1908 the number had fallen to 405. In 1918 the number was 63, and in 1921, the last year for which he had figures, the number was only 27. That showed clearly that there were many more objections from a workman's point of view to proceeding under that Act than there were to proceeding under the Workmen's Compensation Act. He was entirely in sympathy with the intentions of this motion.

The motion was carried without a division.

British Morphia and Heroin.

Captain JOHN HAY asked the Secretary for the Home Department the amount of morphia and heroin manufactured in Great Britain in 1921 and the amount exported; and what became of the balance remaining in the country.—Mr. BRIDGEMAN replied: The figures according to the returns furnished to the Home Office are: Morphine manufactured, 147,790 oz.; exported 77,364 oz.; heroin manufactured, 12,385 oz.; exported 14,107 oz. To obtain the balance remaining and used in the country during the year, the stocks in hand at the beginning of the year would have to be added to the amoun manufactured, and we have no figures to show these amounts, but apart from any supplies obtained illicitly in contravention of the Dangerous Drugs Act the balance would be disposed of for medical and scientific purposes through the wholesale or retail dealers licensed or authorised under the Act.

Telephone Mouthpieces and Disease.

Major Viscount SANDON asked the Minister of Health whether, if in the opinion of his department, disease was spread, as was alleged, by means of mouthpieces of telephones, he would have those in public call-offices disinfected.—Mr. NEVILLE CHAMBERLAIN replied: I am advised that there is no definite evidence to show that disease is spread in this way. As the result of bacteriological inquiries made in this country and abroad some few years ago, it was held that the transmission of pulmonary tuberculosis through the medium of the telephone mouthpiece is practically impossible. In any event, the disinfection of telephone mouthpieces after each individual user would obviously be impracticable.

National Health Insurance Benefits.

Mr. WILLIAM GRAHAM asked the Minister of Health whether he had settled the conditions which would determine the title of members of Approved Societies to participate in schemes for additional national health insurance benefits following the second valuation by the Government actuary; if so, when would the conditions be published, and would Approved Societies be consulted on this point; and whether, if the conditions and consequent regulations had not been settled, the Ministry of Health would submit the proposals to Approved Societies through the Association of Approved Societies and/or the National Conference of

Friendly Societies for consideration prior to their receiving legal effect.—Mr. NEVILLE CHAMBERLAIN replied: The matter referred to by the hon. Member is at present under consideration, and the views of Approved Societies of various types are being obtained, including those represented by the two bodies named in the last part of the question.

Feeding of Necessitous School-Children.

Major KELLEY asked the President of the Board of Education whether he proposed to make any alteration this year in the provision for the feeding of necessitous school-children; and whether any special grant was to be made in relief of the cost of education in necessitous areas.—Mr. E. WOOD replied: The answer to the first part of the question is in the negative. Following the practice of former years an additional grant will be payable in respect of highly rated areas.

"Reconstituted" Milk.

Mr. ALBERT ALEXANDER asked the Minister of Health if his attention had been called to an advertisement appearing in a magazine called the *Milk Industry*, published by the National Federation of Dairymen's Association, offering for sale materials and machinery for the manufacture of reconstituted milk, the sale of which was prohibited by the Milk and Dairies (Amendment) Act, 1922; and, if so, whether he proposed to take any action in the matter.—Mr. NEVILLE CHAMBERLAIN replied: Yes, Sir, my attention has recently been drawn to this advertisement and I am considering whether it is possible to take any effective action in the matter. But I would remind the hon. Member that the offence under Section 4 (2) of the Act of 1922 is to sell "reconstituted milk" as "milk."

The Agreement with Panel Practitioners.

Major MCKENZIE WOOD asked the Minister of Health whether he could yet make any statement as to his proposals for a new arrangement with the doctors under the National Health Insurance Act to take the place of the present agreement, which expired at the end of this year.—Mr. NEVILLE CHAMBERLAIN replied: I am not in a position to make any statement on this matter.—Major MCKENZIE WOOD: Can the right. hon. gentleman say when he is likely to be able to make a statement?—Mr. CHAMBERLAIN: I am afraid I cannot give any definite date at present.—Dr. WATTS: Is the right hon. gentleman aware that under the present agreement many doctors are expected to be on duty 24 hours a day and seven days a week.—No further answer was given.

Medical Officers at the War Office.

Mr. BECKER asked the Under-Secretary of State for War how many medical officers are employed at the War Office; and were some of these doing ordinary secretarial work.—Lieut.-Colonel GUINNESS replied: Eleven medical officers are employed in the War Office. None are doing ordinary secretarial work.

The Spahlinger Treatment.

Dr. WATTS asked the Minister of Health if any investigations had been made by his department as to the value of the Spahlinger treatment for tuberculosis; if so, what was the nature of the reports received; and, if no investigation had yet been made would he take steps at the earliest possible date to have a thorough investigation made, as had already been done by the United States of America and other foreign Governments.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. All the evidence available as to the value of this treatment has been investigated by my department, and one of the medical officers of the Ministry visited Geneva last year, and, through the courtesy of M. Spahlinger, was enabled to examine certain cases of tuberculosis which had been treated by this method. The conclusions arrived at were that, although it is not yet possible to express an opinion upon the scientific value of M. Spahlinger's work from the bacteriological standpoint, the clinical results already obtained fully warrant further investigation as soon as a supply of the complete serum and vaccine is available. It is understood that no definite date can yet be fixed by M. Spahlinger for the production of a further supply even for the purpose of scientific investigation. I am most anxious to encourage further trial of the remedies in this country under expert observation as soon as a supply is available.

Dr. WATTS: Is the right hon. gentleman aware that the lives of many people suffering from tuberculosis have already been saved by the use of this serum?—Mr. CHAMBERLAIN: I have stated in my answer that, so far as we have been able to test the results, they appear to be very satisfactory, but we have not yet been able to get sufficient data to enable us to come to a final conclusion.

Lieut.-Colonel ASTBURY: If I bring to the notice of my right hon. friend several cases which have been cured entirely by the Spahlinger treatment will he give further consideration to the matter?—Mr. CHAMBERLAIN: There is no supply of serum at present.

Colonel ASTBURY: Is the right hon. gentleman aware that M. Spahlinger is practically ruined by the cost of this serum and has no further funds to go on with in order to produce more?—The SPEAKER: The matter cannot be debated by question and answer.

THURSDAY, MARCH 22ND.

The Cost of Naval Hospitals.

The House considered on Report resolutions agreed to in Committee of Supply in connexion with the Navy Estimates for 1923–24.

Captain MOREING suggested that economy might be practised in regard to the naval medical service. He said he had no doubt that the Admiralty would maintain vehemently that if a sailor were put into a military hospital he would surely die, and he had no doubt that their military colleagues would maintain the same in regard to a soldier put into a naval hospital. They could not, however, allow these jealousies to stand in the way of efficiency or of economy. Why did they want to maintain separate hospital accommodation in various towns? What they should do was merely to maintain the actual minimum which was necessary for the accommodation of the three services and expand those services from civilian resources in war time.

Mr. AMERY (First Lord of the Admiralty), replying to the debate, said he could assure Captain Moreing that every endeavour was made to avoid overlapping in the naval medical service. There were a great many places where men of the navy were attended in military hospitals as, for instance, at Gibraltar, and others where military men were attended in naval hospitals as at Chatham.

The resolutions were agreed to by 218 votes to 124.

Schemes for the Blind.

Mr. SHORT asked the Minister of Health if he can state the number of local authorities which had created schemes for the benefit of the blind under the Blind Persons Act, 1920.—Mr. NEVILLE CHAMBERLAIN replied: 135 local authorities out of 145 have submitted schemes under the Blind Persons Act, 1920, and I understand that five other authorities have schemes at present under consideration.

Medical Referees and Disability Cases.

Mr. FREDERICK ROBERTS asked the Minister of Pensions whether it was the practice, in the case of disabled ex-Service men certified by the Pensions Ministry medical referee as totally incapacitated by war service, and where the disability had been admitted by the Ministry as due to service, to pay a lesser rate than full pension in such cases; and, if so, could he give the reasons for such policy.—Major TRYON replied: In cases of disability accepted by the Ministry as due to war service, pension is always awarded at the rate approximate to the degree of disablement certified by the medical board by whom the man is examined. If, as I assume, the hon. Member has in mind claims based on deterioration, I would point out that in such cases the man is referred for examination by a medical referee, not for an assessment for pension purposes, but for a preliminary expression of opinion on the merits of the claim. If the medical referee supports the claim the man is then examined by the board whose assessment is accepted and acted upon, whether higher or lower than the estimate given by the medical referee.

Mr. F. ROBERTS: Is any notice taken of the opinion of the medical referee as to the man being totally incapacitated?—Major TRYON: Certainly, we do attend to the medical referee's opinion. In order to deal promptly with cases we grant an allowance to carry on with. The object is to enable us to deal with the claim of a man who has got worse; otherwise the man's claim would not be settled for a considerable time.

Ex-Service Men in Lunatic Asylums.

Mr. AUBREY HERBERT asked the Secretary for the Home Department whether there were 6000 ex-Service men in lunatic asylums; and whether he would consider the provision of more suitable accommodation and treatment for these men.—Mr. NEVILLE CHAMBERLAIN replied: On Jan. 1st last the number of ex-Service men in mental hospitals in England and Wales classed as Service patients and paid for by the Ministry of Pensions was 4532.

Mr. COLLISON asked the Minister of Pensions the cost of maintaining the 700 ex-Service men now in lunatic asylums; and what would be the additional cost of maintaining these men in private institutions.—Major TRYON replied: I gather that the hon. Member refers to cases in which the mental condition is neither due to nor worsened by service, and I would remind him that my department is not responsible for their maintenance. I understand, however, that the present average cost for maintenance of a patient in a county or borough asylum is 24*s.* a week.

Non-Service Doctors on Medical Boards.

Major GUY PAGET asked the Minister of Pensions how many non-ex-Service doctors and how many ex-Service

doctors were employed on the pensions medical boards in Glasgow.—Major TRYON replied: The total number of medical practitioners on the panel from which members of the medical board for this area are drawn is 172, of whom 85 per cent. are ex-Service doctors.

Appointments in Royal Army Medical Corps.

Lieut.-Colonel FREMANTLE asked the Under Secretary of State for War what number of candidates competed for appointments to the Royal Army Medical Corps at the last examination; what number of vacancies was advertised; how many candidates passed the examination; how many received commissions; what were the main reasons for this dearth of candidates; and how he proposed to remedy them.—Lieut.-Colonel GUINNESS replied: Fifteen vacancies were advertised for appointments to the Royal Army Medical Corps at the last examination for which four candidates competed and were all successful, subsequently receiving commissions. As regards the last two parts of the question, the examination, the first since 1914, was unavoidably held at the very short notice of one month. Before entering into speculation as to other reasons and remedies I think it will be best to see what are the results of an examination held under more favourable conditions.

British Legion and Medical Boards.

Mr. PONSONBY asked the Minister of Pensions whether he had received complaints from the Handsworth and district branch of the British Legion with regard to cases in which local medical boards had contradicted the decision of the pensions appeal tribunal when it had been in the applicant's favour; and whether the pensions appeal tribunal could, at the time of the hearing of an appeal, assess the disability so that the Ministry of Pensions could make the award accordingly.—Major TRYON replied: My attention has been called to the complaint referred to, which is, however, based on a misapprehension, as decisions of the pensions appeal tribunal are invariably accepted by my department. An assessment tribunal may, in confirming the finality of the award, increase or reduce it or they may simply decide that the case is not ripe for final decision. This does not necessarily mean that the tribunal disagree with the rate at which the man's disablement has been assessed, and steps are being taken to make this clear in announcing decisions of this nature.

MONDAY, MARCH 26TH.

Officer's Disability Pensions.

Mr. PARKINSON asked the Minister of Pensions the number of officers of all ranks who were in receipt of disability pensions, giving the aggregate cost of same.—Major TRYON replied: The number of pensions now in payment by my department to officers is approximately 28,500, representing an annual value of about £3,100,000.

Mr. PARKINSON asked the Minister of Pensions the number of officers in receipt of disability pensions whose pensions were reviewed during the period from Feb. 1st, 1922, to Feb. 1st, 1923, stating the number which were increased, decreased, or cancelled, showing, respectively, the amount of money involved by these changes.—Major TRYON replied: During the period mentioned some 30,000 pensions to officers were reviewed, after medical re-examination, as required by the warrant. Of these, 67 per cent. remained unaltered or were increased, while 33 per cent. were decreased or terminated. The result of these changes represented a net decrease in the annual value of the awards reviewed of approximately £345,000.

KING'S CROSS PHILANTHROPIC SOCIETY.—Sir Bruce Bruce-Porter presided at the annual dinner of this Society on March 22nd at the Connaught Rooms, London, W.C., when nearly 500 members and their friends were present. An elaborate vocal and instrumental programme was provided. The object of the Society, which was established in March, 1885, is to relieve local distress, and during 1922 nearly £1600 were distributed. The membership now numbers 651, an increase of nearly 100 since 1920. In proposing the toast of the evening, Sir Bruce Bruce-Porter said that it was almost impossible for a State department, even in England, to have in it a human element, but there was no country in the world where voluntary effort took a greater part. The Philanthropic Society was the product of purely voluntary effort, and he hoped that its membership would grow and its work extend, for there were still a large number of people who required help, owing to the aftermath of the war. The President of the Society, Mr. R. W. Coan, responded, and in giving the toast of "The Chairman," Dr. A. Brown, honorary medical officer to the Society, paid a tribute to the public work of Sir Bruce Bruce-Porter. Dr. E. A. Gregg, in proposing the toast of "The Ladies," gave some striking examples of the philanthropic work done by women during and since the war.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, April 2nd.—10 A.M., Mr. MacDonald: Genito-Urinary Dept. 2 P.M., Mr. Addison: Surgical Wards. 3 P.M., Mr. Simmonds: Surgical Out-patients.

TUESDAY.—10.30 A.M., Dr. Paterson: Demonstration of Medical Cases. 2 P.M., Mr. Banks Davis: Nose, Throat, and Ear. 2.30 P.M., Dr. Pritchard: Medical Wards.

WEDNESDAY.—2 P.M., Dr. Burnford: Medical Wards. 2.30 P.M., Mr. Donald Armour: Surgical Wards. 3 P.M., Dr. Pernet: Skin Dept.

THURSDAY.—2 P.M., Mr. Bishop Harman: Eye Dept. 3 P.M., Dr. Scott Pinchin: Medical Out-patients. 5 P.M., Mr. Simmonds: Surgical Out-patients.

FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Flett: Radiology. 3 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9 A.M., Dr. Burnford: Bacterial Therapy Dept. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10.30 A.M., Mr. Maingot: Surgical Pathology.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients and Out-patients, Operations, Special Departments.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.

THURSDAY, April 5th.—4.15 P.M., Dr. J. Bright Banister: Obstetric Emergencies. (Followed by a discussion.)

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

THURSDAY, April 5th.—5 P.M., Mr. T. B. Davies: Displacements of the Gravid Uterus.

Appointments.

ADKINS, DULCIE S., M.B., B.S. Lond., has been appointed Resident Assistant Medical Officer at the Boundary Park Hospital, Oldham.

BARRITT, R. T., L.D.S. R.C.S. Eng., Honorary Dental Surgeon to the French Hospital.

DRYBROUGH-SMITH, E., M.D., Ch.B. Edin., F.R.C.S. Edin., Honorary Assistant Surgeon at East Sussex Hospital, Hastings.

GOWERS, DOROTHY W., L.R.C.P. Lond., M.R.C.S., Assistant Medical Officer, Borough of East Ham.

JOYNER, C., M.B., Ch.B. Aberd., Assistant Medical Officer at the Derby County Mental Hospital.

LOWE, G. B., D.O. Oxon., L.R.C.P. Lond., M.R.C.S., Surgeon on the staff of the Royal Eastbourne Eye Hospital.

NEWSHOLME, H. P., M.D., B.Ch. Lond., M.R.C.P. Lond., D.P.H., Medical Officer of Health for Croydon.

PATTON, J., M.B., B.Ch., Resident Surgeon, Nottingham General Dispensary.

Certifying Surgeons under the Factory and Workshop Acts: JONES, J. H. (Lostwithiel); MACNAUGHT, W. W., M.B., Ch.B. Glasg. (Shefford, Beds); MOIR, J., M.B., Ch.B. Aberd. (Long Eaton); SIDEBOTHAM, F. N., M.D., B.Ch. Camb. (Ottery St. Mary); WHITINGTON, P. P., L.S.A. (Tuxford).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. H.S. £200.

Bath, Royal Mineral Water Hospital.—Res. M.O. £200.

Bath, Winsley Sanatorium.—Asst. Res. M.O. £250.

Bedford County Hospital.—H.S. Also Asst. H.S. £175 and £130 respectively.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £175.

Bridge of Weir, near Glasgow, Consumption Sanatoria of Scotland.—Asst. Res. M.O. £250.

Brighton, Royal Sussex County Hospital.—Hon. P. Hon. Asst. P. Hon. Med. Clinical Asst.

Bristol, Cossham Memorial Hospital, Kingswood.—Res. H.S.

Bristol Eye Hospital.—H.S. £150.

Bristol Royal Hospital for Sick Children and Women.—Hon. P.

Bromsgrove, Worcestershire Mental Hospital, Barnsley Hall.—Second Asst. M.O. £300.

Cancer Hospital, Fulham-road, S.W.—Anæsthetist.

Ceylon Medical College.—Professor of Physiology and Reg. £800.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Half-time M.O. £200.

Colchester, Essex County Hospital.—H.S. £200.

Derby Isolation Hospital and Sanatorium.—R.M.O. £400.

Derbyshire Royal Infirmary.—H.S. £200.

Dundee City.—Special M.O. for V.D. £600.

Gloucestershire Royal Infirmary and Eye Institution.—Surg.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and Non.-Res. H.P. Each £150.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. £50. Also Surg. Registrar. £300.
Hull Royal Infirmary.—Sen. H.S. £200.
Lagos Town Council.—African Asst. M.O.H. £750.
Leicester Royal Infirmary.—Hon. Ophth. S.
Lincoln, Lindsey County Council.—Asst. Tub. O. and Asst. School M.O. £500.
Liverpool Open Air Hospital for Children, Leasowe.—Jun. M.O. £250.
London County Mental Hospital Service.—Seventh Asst. M.O. £440.
London Temperance Hospital, Hampstead-road, N.W.—Med. Reg. 40 guineas.
Maidstone, West Kent General Hospital.—H.S. £220.
Manchester, Ancoats Hospital.—Radiologist. £300.
Manchester Royal Infirmary.—Res. Surg. O. Also Asst. Res. Surg. O. £250 and £200 respectively. Female R.M.O. and Asst. R.M.O. £200 and £100 respectively.
Middleton-in-Wharfedale Sanatorium, near Ilkley.—Asst. M.O. £500.
National Dental Hospital, Great Portland-street, W.—Hon. Anæsthetist.
Norfolk Education Committee.—Asst. School M.O. £500.
Plaistow Fever Hospital.—Second Asst. M.O. £200.
Prince of Wales's General Hospital, Tottenham, N.—H.P. and H.S. Each £150. Jun. H.S. and Jun. H.P. Each £110.
Public Dispensary, 122, Drury-lane, W.C.—Hon. P. Also Res. M.O. £105.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Two H.P.'s. and H.S. Each £100. Also Asst. P. £1 1s. per attendance.
Rainhill County Mental Hospital.—Deputy Med. Supt. £350. Also Locum Tenens Asst. M.O. 7 guineas weekly.
Redhill, Surrey, Royal Earlswood Institution for Mental Defectives.—Jun. Asst. M.O. £250.
Rotherham Hospital.—Jun. H.S. £150.
Royal Northern Hospital, Holloway, N.—Cas. O. £150. H.P. £100.
St. Pancras Hospital, Pancras-road, N.W.—Jun. Asst. Med. Supt. £350.
Southampton County Borough.—Asst. School M.O. £500.
Staffordshire General Infirmary, Stafford.—H.P. £150.
Throat Hospital, Golden-square, W.—Hon. Registrar.
University College Hospital, Gower-street, W.C.—Hon. Ophthalmic S.
Willesden General Hospital.—Hon. Pathologist and Bacteriologist.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.

Births, Marriages, and Deaths.

BIRTHS.

AINLEY WALKER.—On March 23rd, at Charlbury-road, Oxford, the wife of Dr. E. W. Ainley Walker, of a daughter.

MARRIAGES.

BROWNE—PETERS.—On March 24th, at All Souls', Langham-place, Surgeon-Captain Robley Browne, O.B.E., Royal Navy (retired), to Mildred, daughter of Mr. and Mrs. Alfred Peters, Flackwell Heath, Bucks.

DEATHS.

BENSLEY.—On March 20th, at Cromwell-road, S.W., suddenly, Lieut.-Colonel Edwin Clement Bensley, F.R.C.S., I.M.S.
SIMMINS.—On March 23rd, at Upper Tollington Park, N., after influenza, Alfred George Simmins, M.B. Lond., B.Sc., late Temp. Surgeon-Lieut., R.N. (1914–19).
SIMMINS.—On March 23rd, at Upper Tollington Park, N., from heart failure, Anna Bella, wife of Alfred George Simmins, M.B.
SPENCER.—On March 17th, at the Victoria Hospital for Children, Tite-street, Chelsea, of pneumonia, Elfrida (Biddy) Spencer, B.A., M.R.C.S., L.R.C.P., dearly loved only daughter of Walter Spencer, F.R.C.S. and Elizabeth Spencer, 2, Portland-place, W.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Special Terms for Position Pages.

Notes, Comments, and Abstracts.

THE MYSTERY OF LORD BYRON'S LAMENESS.

Abstract of an illustrated Address delivered at a Social Evening of the Royal Society of Medicine on March 21st, 1923,

BY H. CHARLES CAMERON, M.D. CAMB., F.R.C.P. LOND.,
PHYSICIAN IN CHARGE OF THE CHILDREN'S DEPARTMENT, GUY'S HOSPITAL.

Dr. Cameron, after some introductory remarks, spoke of the widely spread unpopularity of Byron during his lifetime and of the intense interest which was taken in this question of his lameness. To the public of that day, said Dr. Cameron it seemed so right and fitting that this gifted and infamous being, whose face was of such amazing beauty, and whose life was so scandalous, should have, if not a cloven hoof, at least a club-foot. For charges of irreligion and immorality Byron cared very little. Indeed, I think that Byron was one of those persons, not uncommonly met with, who, with a kind of inverted hypocrisy, are at some pains to appear to the world considerably more wicked than they are. But on the question of his lameness he was exquisitely sensitive. In some notes of his childhood which he has left behind him he tells us how once that terrible mother of his, in one of her ungovernable fits of temper, called him "a lame brat," and how readily came his answer, "I was born so, mother." At Pisa, three years before his death, he wrote his tragedy, "The Deformed Transformed." The first words of the play are the mother's cry to her son, "Out, Hunchback!" and again the answer comes, "I was born so, mother." Byron never forgot it, nor did the British public which he had so offended and flouted.

Which Foot was Deformed?

Now the first point to which I would draw your attention is that his friends and his enemies alike showed a curious division of opinion as to which foot was deformed, an uncertainty which seems hard to explain if he suffered from club-foot in the ordinary sense of the word. Moore, his friend and biographer, Galt, the companion of his travels and also his biographer, Lady Blessington and the Countess Albruzzi, his intimate friends, never knew or could make up their minds which foot was lame. Gentleman Jackson, his boxing instructor, thought it was the left. His mother, who ought to have known, writing to Mrs. Leigh that she may obtain the advice of the great John Hunter, states definitely, "it is the right foot." Mrs. Leigh Hunt was of opinion that the left foot was shrunken but that it was not a club-foot. In THE LANCET for 1827–8 an instrument-maker, named Sheldrake, taking advantage of the public interest in the question, and not averse from a little self-advertisement, makes a long communication entitled, "Distortions of the Foot: Lord Byron's Case." He states that some 25 years before the fame of the cures which he was achieving in the treatment of club-foot reached the ears of Mrs. Byron in Aberdeen, and the boy was sent to London to consult him. By some mistake, however, we are told, he was taken, not to the genuine and gifted Mr. Sheldrake, but to an impostor of the same name practising hard by. It was not until many years later that, to his great chagrin, the poet heard of the deception which had been practised upon him in his innocent childhood. He at once journeyed to London to express to the real Mr. Sheldrake his sense of disappointment at having missed by so little the relief that might have been his. At this time the poet was just starting upon an Albanian tour, and all that could be done at the moment was to take a cast of the foot in plaster-of-Paris. Sheldrake appends to his article a crude woodcut of the grossest form of club-foot, such a woodcut as did duty in many an eighteenth century text-book, and claims that it represents a sketch made by him from this cast. It represents the left foot. Stendhal says the right foot. Thorwaldsen, when about to execute the statue of the poet now in the Library of Trinity, Cambridge, was told by Byron's intimate friend Hobhouse that the lameness was in the right foot. The Countess Guiccioli said the left. By the kindness of Mr. John Murray, the grandson of the publisher of the poet's works, we have here to-night two surgical boots made for Byron in boyhood. They are both for the right foot. They show that, whatever the nature of its incapacity, the right foot was not clubbed, but was long and very slender. I show you also the lasts on which Byron's boots were made. They were presented to the Nottingham Museum shortly after his death. There they were found in 1897 stowed away in a drawer with the

original label still attached. And the plot begins to thicken for the lasts show feet which are well shaped and symmetrical.

Trelawny's Statement and Recantation.

In the year 1881 there was still living, near Worthing, Edward John Trelawny, in the eighty-ninth year of his age, the friend and companion of Byron and of Shelley. Of him Byron says with truly prophetic vision that he could not tell the truth "even to save his life." Upon the words of this old man a younger generation of the poet's admirers relied. In 1858 he published his celebrated "Recollections of Shelley and Byron." In it he describes his determination to satisfy his own curiosity and the curiosity of the public in the matter of Byron's deformity. To Missolonghi he hurried, to view the embalmed body of the poet, as it lay awaiting transport to England. He records minutely the steps which he took to carry out his indecent purpose. That he might be alone with the body he feigned faintness and asked Fletcher, the poet's valet, who was on guard, to fetch a glass of water. Then hurriedly he drew back the black pall and the white shroud and uncovered the feet and legs. "The great mystery was solved," he says, "both his feet were clubbed and his legs withered to the knee—the form and features of an Apollo with the feet and legs of a sylvan satyr." Surely, this was just what the public expected and wanted to hear, and that is what the public was told by Trelawny, the latest left of all his friends. But when Trelawny was a very old man, in his eighty-sixth year when his fame and responsibility as the sole surviving intimate of Byron had grown yearly greater, he republished his book with some additional matter and one striking alteration. In this passage we read again of the deception practised upon the watching valet, and of the uncovering of the poor dead feet: "I uncovered the Pilgrim's feet and was answered. It was caused by the contraction of the back sinews which the doctors call tendon Acchilles [sic] that prevented his heels resting on the ground and compelled him to walk on the fore part of his feet. Except for this defect, the feet were perfect." I think Trelawny found that he could not go down to the grave with the lie unrecalled and uncorrected and that he republished his book that he might ease his conscience.

Byron's Lameness not Extreme.

Byron's lameness, though obvious to all who met him, was not severe or extreme. It certainly did not incapacitate him from active exercise. It did not prevent him from playing cricket for Harrow against Eton in 1805, though he had someone to run for him, and though cricket, and even an Eton and Harrow match, was hardly the strenuous exercise which it has since become. Of his swimming prowess there is no doubt, if only for his celebrated swim across the Hellespont. He was in the water 1 hour and 10 minutes.

Was it Little's Disease?

What, then, was the nature of this extraordinary lameness, which embittered the poet's whole life, which aroused such unusual public interest and curiosity, which permitted such athletic success, and which seemed so elusive that though all his friends and relatives agreed as to its existence, an almost equal number located the fault in one foot or the other? Is it permitted to attempt a diagnosis 100 years after the death scene at Missolonghi? In that long space of time we have learnt much of the nature of injuries to the child at birth. Forty years after Byron's death, Little, the celebrated orthopædic surgeon, the founder of the Orthopædic Hospital, attended a meeting of the Obstetric Society and described in a communication, thereafter famous, a form of stiffness, rigidity, and incoördination which more often than not is confined to the lower extremities. Little's disease, as it has ever since been called, is caused by hæmorrhage on to the surface of the infant's brain, the result of some delay in the establishment of respiration at the moment of birth. That part of the cerebral cortex which presides over the voluntary movements of the legs is damaged. A child so injured walks clumsily and with difficulty, though the legs and feet are well formed. At rest or when asleep nothing amiss is apparent, but when a voluntary act such as walking is attempted, the limbs are gripped in a sort of rigid spasm, due to the failure of the antagonistic muscles to relax. In consequence the sufferer walks with a curious running gait, with a great appearance of effort, though only slow progress may be achieved. The body rises upon the toes and the knees are kept tightly pressed one against the other. I think that there can be no doubt that Lord Byron suffered from a mild form of this spastic paraplegia or Little's disease due to injury at birth.

We have conclusive evidence of abnormality of gait coupled with the proof that the feet were symmetrical and well formed. Of the character of the gait Trelawny alone attempts a detailed description. It is such that it accords with the assumption that Byron suffered from Little's disease and with that alone: "During his brief and brilliant career in London it was noticed by his friends that to hide his lameness he always entered a room quickly, running rather than walking, and stopt himself suddenly by planting his left (the comparatively sound) foot on the ground and resting upon it. On the rare occasions when he was seen walking in the streets it was observed that he moved with a peculiar sliding gait rather than the easy lounge of the fasionable saunterer—in fact with the gait of a person walking on the balls and toes of his feet and doing his best to hide the singular mode of progress." No inapt description of a person suffering from Little's disease.

It is characteristic of Little's disease that the sufferer learns by slow degrees and infinite pains to achieve a high measure of control over the limbs which are at first so stiff and wayward. In early childhood Byron was carried from doctor to doctor. He was treated in turn by John Hunter, Dr. Livingstone of Aberdeen, Matthew Baillie, Dr. Laurie of 2, St. Bartholomew's-close, as well as by the instrument makers, Lavender, of Nottingham, and Sheldrake of the Strand. By his thirteenth year all treatment seems to have been abandoned and we hear of no more visits to doctors. The poet himself repeatedly states that his lameness was caused at his birth. Of the actual circumstances of his birth we know but little, and that little is perhaps uncertain. Hanson, the family solicitor, is said to have bought the caul with which he was born at a house hard by this building, 16, Holles-street, Cavendish-square. He gave the caul to his brother, Captain Hanson, R.N. Perhaps because it was Byron's it brought none of its proverbial luck. Captain Hanson went down with his ship off Newhaven. Lastly it may be noted that Byron appears to have suffered at times during his life from epileptiform attacks such as are a not uncommon result of the cortical damage in Little's disease. With a local malformation of the foot there is no special liability to epilepsy.

I suggest to you that we have found the solution of the mystery which so agitated our forefathers, and found it in the back drawing-room of a little house, within 100 yards of this hall, where 135 years ago the baby Byron first, but too slowly, drew his breath.

A MEMORIAL TO THE LATE MR. A. W. BACOT.

Arthur William Bacot, F.E.S., entomologist to the Lister Institute of Preventive Medicine, died of typhus in Cairo on April 12th, 1922, while investigating this disease with Dr. J. A. Arkwright at the invitation of the Egyptian Government, and his work was the subject of a memorial address by Dr. Major Greenwood at a meeting of the London Natural History Society held at 40, Winchester House, London, E.C., on March 20th.

Arthur William Bacot, said Dr. Greenwood, was of Huguenot descent, delicate, and of a highly sensitive temperament. His attitude towards birds and beasts was sympathetic, and although he learned little of languages and science he had the faculty of seeing nature in a romantic dress. He started butterfly hunting at 5 years of age, and his delicate constitution kept him out of the City till he was 16, when he became employed in a commercial office. He joined the London Natural History Society and published several papers on subjects connected with lepidoptera, contributing largely to a monograph on the subject by the late Mr. Tutt. His work was characterised by much care and painstaking. One of the papers, describing observations on many generations of a moth made by himself and Mr. L. B. Prout, was published by the Royal Society and this brought him into touch with general scientific workers. Hence, in 1909, when the Advisory Committee on Plague in India was looking for a naturalist able to study the habits of the flea, Bacot was invited to undertake the bionomic investigation. His investigations in a garden shed at Loughton under conditions far from ideal were so good that he was subsequently appointed entomologist to the Lister Institute, where he at once responded to scientific environment and proper equipment. With Prof. C. J. Martin he made the brilliant discovery of the mechanism by which the flea conveyed infection in plague. Obscurity still reigns in regard to various factors of plague distribution—e.g., why plague introduced into a country such as our own (there had been a small outbreak in Essex) did not spread rapidly through the country? Bacot's opinion was that the success of an epizoötic in transferring itself to a human host depended upon the adjustment of small details only to be ascertained by a minute study of animal conditions.

The lecturer then went on to describe Bacot's careful search for a reliable agent for the destruction of fleas, which he found in naphthalene; his work on the yellow fever problem in West Africa, embodied in a masterly report issued by the Yellow Fever Commission; and finally, his war work. Bacot dealt, said Dr. Greenwood, with lice exactly as he had dealt with flies and mosquitoes. The virus of trench fever was shown to exist in the body of the louse, and this discovery opened the way to further progress. In

the spring of 1920 he was asked to join the United States Red Cross Expedition to Poland and accepted the invitation although recognising the personal risk. During his work on rickettsia he contracted trench fever, and was much impressed by the inertia and mental distress caused by the illness, a fact insufficiently recognised when soldiers were the victims. Here he learnt Weigl's technique, subsequently modified by himself, in the rectal injection of blood in order to feed lice infected with typhus. Finally, Dr. Greenwood came to the tragic circumstances of Bacot's death, mentioning the fact that during his delirium he spoke only of his researches.

Dr. Millais Culpin, who moved a vote of thanks to the lecturer, emphasised the remarkable way in which Bacot emerged from the amateur to the professional research worker. It was all to the good, he thought, that Bacot remained uninfluenced by the somewhat necessary dogmatic teaching of science. His success had been due to his simple, straightforward, and unbiased methods of dealing with a subject. He never saw what was not there.

Mr. L. J. Tremayne, Dr. J. A. Arkwright, and Prof. A. E. Boycott also testified their admiration for Bacot's character.

In proposing a memorial to the memory of Bacot, Dr. Greenwood suggested that it might take the form of subsidising the teaching of natural history in elementary schools, a subject which had been very near to Bacot's heart.

THE MANUFACTURE OF MEDICAL BOTTLES.

THE recent controversy in the press relating to the capacity of medicine bottles has aroused interest in their manufacture. A visit paid last week to the new Charlton works of the United Glass Bottle Manufacturers, Ltd., has shown that in this, the largest bottle-making establishment in the country, no pains are spared to secure the greatest accuracy. The making of the moulds is a very highly skilled craft; capacity is estimated by water displacement, a solid wooden model of the bottle, and a "parison" or solid wooden model representing the cubic content of hot "metal" required, are used for this purpose; these are afterwards filed, together with the metal gauges made for use on the lathes, and all accessories, such as corks, labels, &c., enabling an order to be duplicated without difficulty at any time. The actual process of manufacture is fascinating. The sand and other ingredients are fed into furnaces and brought to a great heat by burning jets of vaporised oil; hand-blowing has been superseded, and beside each furnace revolves an Owens machine, a complicated and almost uncanny device, dipping its ten arms in turn into the molten glass, drawing up the exact quantity required, depositing it into the mould contained in each arm, and automatically blowing the bottle, all in one revolution of the machine. "Medicals," as medicine bottles are called, are produced by this method at a rate of 40 per minute. Still glowing, the bottles are passed down a trough to a lower floor, where they are set in annealing chambers in order that the strain may be taken out of the glass. After some hours in these chambers, the bottles are passed out and carefully inspected for imperfections before being packed for transport. The loss in breakages is a very small factor, so complete in every detail is the process of manufacture. Three continuous eight-hour shifts are worked, day and night, and millions of first-class bottles are turned out every year for the use of manufacturing chemists in this country, and to meet a large colonial and foreign trade. No doubt need be entertained concerning the accuracy of make and capacity of any bottle produced by this firm.

MILITARY SURGERY AND MORTALITY UNDER QUEEN ANNE.

"THE history of a soldier's wound beguiles the pain of it," says Sterne in "Tristram Shandy," but Uncle Toby, though he suffered much misery during four years, is made by his creator to tell us next to nothing about the manner of its treatment. According, indeed, to Mr. G. E. Gask's account of the care of the sick and wounded during the Marlborough campaigns of the year 1704,[1] we have scarcely any information as to how the wounded were treated. There were, of course, no anæsthetics, though opiates were used during operations, and military surgery probably "consisted largely of dressing wounds with various medicaments, probing them and removing foreign bodies, incising abscesses and amputating shattered limbs." Amputation was certainly performed, and we find Captain Windham, of Wyndham's Horse, writing light-heartedly to his mother on August 23rd (O.S.), 1704, stating that his leg was cut off "on Tuesday last was a fortnight." The decision to operate immediately preceded the operation, but we have no description of what must have been a simple affair, for it was followed by no ill-effects, and Captain Windham, probably on horseback, subsequently fought at Ramillies and Malplaquet.

The year of Ramillies (1706) was one of active political life. Not only did the great battle, with its 13,000 French dead, inflict a severe reverse on the ambitions of Louis XIV., but at home England and Scotland agreed upon the terms of their union, while science and literature flourished to such a degree that the period is referred to as the Augustan Age. John Evelyn died in 1706, honours were being showered on Sir Isaac Newton, Mead and Radcliffe were alive and active, and abroad Bayle died, while Leibnitz, Boerhaave, and a host of other great scientific names flourished. It is the more curious, therefore, to contemplate what may be called the ordinary give-and-take of medical knowledge in England at that time. The Bills of Mortality for 1706 take us back into the Dark Ages. "Within the limits of the Bill" the deaths recorded are often mysterious. They defy modern diagnosis. Four persons died of bleeding, six of bloody flux, four "bursten." "Chrisoms" took off eight, colick 101. Consumption was understood and 2716 died of it; deaths from fever, presumably typhoid—but we are not sure—numbered 2662. "Calenture" is counted separately and claims two victims. French pox numbers 47 victims, and small-pox 721. From old age died 1563, from apoplexy 64, from childbed 238, from convulsions 5961 (these may have been children), dropsy 742, diabetes 6, evil (King's evil) 60, fistula 22, flux 11, gangrene 6, gout 17, "great cold" 2, "grief" 7, "head ach" 1, "head-mould shot" 10, hooping cough 2, jaundice 87, imposthume 54, infants (? infantile ailments) 15, leprosy 1, lethargy 6, looseness 6, lunatick 26, malignant fever 2, measles 361, megrim 2, mortification 28, palsy 23, pleurisy 26, purples 9, quinsy 8, rash 3, rheumatism 29, rickets 206, St. Anthony's fire 8, scald-head 1, scarlet fever 4, sciatica 2, scurvy 5, shingles 1, spotted fever 54, stone 43, "suddenly" 68, surfeit 52, teeth 1185, thrush 38, "tissick" 251, tympany 11, water in the head 4, wen 1, worms 12. Gastric surgery being still unheard of, we find a fanciful list of illnesses, presumably internal, given as causes of death. Thus 6 persons died "livergrown," 1 died of "pain in the side," 56 of that puzzling ailment or complex "rising of the lights," 7 of rupture, 188 "stoppag'd in the stomach," 7 of strangury, 3 of "stronguillion," 7 of "twisting of the guts," 6 of "vomiting and looseness."

Despite the above formidable list the deaths in 1706 were not more than 19,847, and the decrease in burials amounted to 2250. The population of England at that time was about 6,050,000.

PUBLIC HEALTH IN MAURITIUS.

FROM a report prepared by Mr. L. Kœnig, Assistant Colonial Secretary, it is to be gathered that the ascertained population of the colony of Mauritius at the taking of the census in May, 1921, was 376,680. The birth-rate for 1921 among the general population was 39·7, and among the Indian population 37·5 per mille. The death-rates per 1000 in the two populations were 42·6 and 39·3 respectively. The number of deaths due to malaria and malarial cachexia (highest death-producing factors in Mauritius) was 3564. The next high causes of death were pneumonia and bronchopneumonia 2067, and influenza 1563. There were 291 deaths from plague. The epidemic started in May, reaching its maximum in November and finishing at the end of December. In the whole island 375 cases were recorded, of which 318 were in Port Louis. Enteric fever accounted for 288 cases and caused 28 deaths. The infantile mortality (deaths of children under one year) gave a ratio of 176·7 per 1000 births. There were 1623 still-births. A good start has been made with the work of training the necessary staff of midwives and also with general maternity work. During the year the number of cases treated in the public hospitals was 19,127, and in dispensaries 60,671, and there were 5066 outdoor cases, making a total of 84,864. At the Leper Asylum there were 43 patients when the year began (males 30, females 13). There were 15 admissions during the year, 11 deaths, and 10 discharges, 37 lepers remaining at the end of the year. A new leper colony is being erected a few miles out of Port Louis, and when it is completed the law compelling compulsory segregation of lepers will be brought into force. The climate of Mauritius is tropical, but, owing to the high elevation of the central plateau, a large part of the island enjoys a temperate and even bracing climate. The rainfall is irregular and varies according to the locality and elevation.

LYSOL.

WE are asked by Lysol, Ltd., Raynes Park, London, S.W., to call attention to the altered form in which their well-known disinfectant and antiseptic is now packed. Hitherto the bottles containing it have been sold in a wrapper. The firm now put up the bottles in a yellow carton, bearing a picture of a lysol bottle marked Marshall's Lysol.

[1] Contribution to the History of the Sick and Wounded during Marlborough's March to the Danube in 1704, and at the Battle of Blenheim, by G. E. Gask, C.M.G., D.S.O., F.R.C.S. London: John Bale, Sons, and Danielsson. 1922.